

GAZETTEER OF INDIA

ORISSA STATE

Vol. III



सत्यमेव जयते

ORISSA STATE GAZETTEER



ORISSA STATE

Vol. III

By

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Chief Editor

नमो भगवते वासुदेवाय

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PREFACE

The preparation of State Gazetteer in three volumes was completed and sent to the press in May 1988 for printing. The first volume was published in 1990 and the second in 1991. The present volume is the third and the last in the series. Drafts of most of the write-ups were collected from time to time beginning from the year 1982. Hence, the facts and figures they presented are now a little out of date, but have been updated as far as possible. This volume, however, deals mainly in economic structures and social services in Orissa.

The agrarian economy in Orissa underwent a rapid decline owing to many impediments. In the first phase of her history the village level, self-sustained politico-economic units, encountered the Brahminical institutions. During the Muslim and Mughal periods the area of foreign impact widened. In the third phase of its history, the area of alien impact widened further completely jeopardising the economic life of the people. It was the formidable impact of western imperialism and capitalism that challenged the basic value system of Orissan life which centred round the village level folk moots. Thus the economic history of Orissa should be studied against the background of the colonial mode of production and changed agrarian relation keeping in mind the fact that Orissa was a part of the vast colonial system of the British Raj. The people of Orissa had never been exposed to economic maladies as strongly as they were during the British rule. No doubt, the Muslims, the Mughals and the Marathas had had their own periods of exploitation. The people had been subjected to serious sufferings during these periods. As a result, their social and economic life had practically come to a standstill point. But the British Raj was distinct for its systematic exploitation, neglecting the local interests and finally destroying the traditional economic structure. Their faulty land revenue policy and maladministration broke the backbone of Oriya people. One hundred and fifty years they ruled in the coastal districts and fifty years more in the southern part, but during this long stay they were not able to bring about any fundamental change in the economic life of the people. Changeless, they continued in poverty, indebtedness and economic frustration. By the time British left India the economic strength of the Oriyas was as low as Rs.14.9 per capita expenditure per month whereas this figure stood at Rs.35.1 in Punjab, Rs.27.1 in Bengal, Rs.20.0 in Bombay, Rs.18.2 in Madras and the overall figure for India was Rs.21.1. So, in this volume, an attempt has been made to give vivid descriptions about the post-independence economic structures and activities, and social services prevalent in the state.

To give the readers an idea of the physical aspects of Orissa and important places a general map prepared by the Directorate of Survey and Map Publications, Orissa, has been given at the end of Volume I. In the case

of place names the system adopted by the Survey of India, New Delhi; and the Director of Land Records and Surveys, Orissa, has been followed. The photographs are supplied by different organisations indicated under the respective photographs. Diacritical marks are given in the glossary only.

The Chair-persons and members of the Gazetteers Working Committee and the Gazetteers Advisory Committee who are eminent scholars and experienced in their respective fields of work have co-operated fully in the speedy finalisation of the work. My thanks and gratitudes are due to them. I thank all our contributors and Heads of Departments who have co-operated with this office in compiling this volume. My thanks are also due to the Commissioner-cum-Director, Director (Technical), Deputy Directors, Assistant Directors and the staff of the Printing, Stationery and Publications, Orissa Government Press, Cuttack, for extending their help and co-operation in the publication of this volume.

The following staffs of the Revenue (Gazetteers) Department have worked whole-heartedly and ungrudgingly in the preparation and publication of this volume: Shri Amulya Kumar Satpathy, Joint State Editor (Retd.); Shri Basanta Kumar Das, Joint State Editor; Shri Gour Prasad Patnaik, Research Officer; Shri Prafulla Behera, Oriya Translator; Compilers— Shri Ramakanta Mishra, Shrimati Bijoylaxmi Praharaj, Shrimati Umamoni Senapati, Shri Chittaranjan Das, Shri Bidyadhar Palai, Shri Subodh Chandra Mohapatra and Shri Subrat Kuanr. Shri Sarat Chandra Mohapatra, Section Officer; Shri Rabindra Kumar Swain and Shrimati Gayatri Senapati, Assistants to Oriya Translator; Shri Durga Charan Mohapatra and Shri Braja Kishore Parida, Senior Assistants; Shri Satyananda Mahapatra, Head Typist; Senior Typists—Shri Akshya Kumar Barik and Shri Haribandhu Ghadei; Junior Typists—Miss Binapani Bose, Shri Pinaki Satpathy and Shri Dwarikanath Maharana; Shri Sudarshan Sahoo, Diarist-cum-Recorder; Shri Lakshmidhar Patnaik, Driver and all the Class IV employees of this office have also rendered ungrudging assistance in their official capacity in the preparation of this volume.

Bhubaneswar,
the 24th December, 1991.

Nrusinha Charan Behuria

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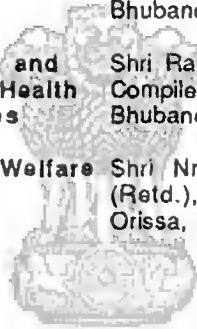
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CHAPTER I

AGRICULTURE AND IRRIGATION

1. INTRODUCTION

Physical Regions

There are four well-defined physical regions in the state, i.e., the northern plateau, the central table-land, the eastern ghats region and the coastal tract.

The Northern Plateau

This region is a continuation of Chota Nagpur plateau of Bihar and includes the districts of Mayurbhanj, Kendujhar and Sundargarh; Pal Lahara subdivision, and northern parts of Talcher subdivision of Dhenkanal district; small parts of the north-west of Jajpur subdivision of Cuttack district; Nilagiri subdivision of Baleshwar district and Deogarh, Kuchinda and northern part of Redhakhol subdivisions of Sambalpur district. About twenty-three per cent of the total area of the state comes under this region. There are a number of hill ranges in this region raising to elevations of 600 mt. to 1,000 mt. above mean sea-level. This region consists of most parts of the watersheds of the Brahmani, the Baitarani, the Salandi and the Burhabalanga. The Brahmani and the Baitarani divide the plateau into three almost equal parts. The hills are thickly wooded and are intercepted with valleys under cultivation.

The average annual rainfall of this region is 1,610 mm. which is the highest among those of the four agroclimatic regions of the state. About 45 per cent of the area is covered by forest, only about 36 per cent of the total area is under cultivation. Rice is grown on 75 to 81 per cent of the cropped area. Orchard crops orange and litchi are grown in this region. The sloping uplands are well suited for maize, jowar, etc., and the low lying valleys grow rice.

The important orange belt of Pal Lahara-Deogarh is located in this zone where oranges of excellent quality are grown. Areas like Badabahal and Kuliposh produce quality litchis and In recent years

compact area plantation of litchis in Budha Bhuin area with irrigation water from Khandadhar waterfall have been taken up. There is good scope for extension of north Indian mango varieties, banana of Patkapura variety and other table strains, as well as pineapple and papaya. In the drier regions there is scope for growing ber, grape, Bel, Aonla and guava.

The Central Table-land

The central table-land consists of the district of Balangir, the southern part of Dhenkanal district, northern part of Boudh subdivision in Phulabani district, Athagarh subdivision of Cuttack district, and Padmapur, Baragarh, Sambalpur Sadar and southern part of Redhakhol subdivisions of Sambalpur district. The region which is as large as the northern plateau is generally flat with undulating and folded topography. It consists chiefly of the Mahanadi basin with the rivers Ib, Jira, Ang and Tel. On the extreme north-west lies a part of the catchment of Brahmani. The table-land gradually rises from east to west and nowhere except in some extreme southern, western and eastern parts, the elevation is more than 300 mt. The highest elevation about 900 mt. is that of the Gandhamardan range separating the districts of Sambalpur and Balangir in the extreme west. The western part of the region is intersected by small rivers at almost regular intervals. The great plains of this region is very well suited for cultivation of rice, wheat, potato, a variety of vegetables and groundnut. With the commencement of irrigation from Hirakud Project agricultural production in the area has been greatly increased.

The average rainfall of this region is 1,484 mm. Distribution of rainfall is however uneven. The district of Sambalpur has the highest average annual rainfall of 1,527 mm. Even within this district, the rainfall gradually decreases from north-east to south-west, Padmapur subdivision in the extreme south receiving the lowest rainfall. Similar is the case with the southern part of Balangir district and western part of Dhenkanal district. Frequently this causes failure of crops due to chronic droughts in these areas.

Rice is the main crop grown in 60 per cent of the area. Pulses and oil-seeds are grown in sloping uplands. Among the pulses and oil-seeds, Kulthi (horse gram) and sesamum are the crops most extensively grown. Arhar is also grown in considerable areas particularly in the western part of Dhenkanal district. Among the four agroclimatic regions this is most suitable for wheat and next to the coastal region for paddy. Mesta is grown in this region as an important fibre crop.

Mango of both north and south Indian varieties including Baiganpalli, Langra, Bombay Green, Fazli, etc., are grown in this region. Guava, Bel, litchi, orange, lemon, banana, etc., find place in special pockets. The Nrusinghanath or Paikmal region offers an excellent agroclimate for the extension of fruit growing area. Citrus is found growing wild in this area. There are extensive patches of Rangpur limes in the hillslopes. A number of hill streams can easily be located around in which area perennial plantations can be taken up.

The Eastern Ghats Region

This region mostly consists of hill ranges which belong to the main lines of Eastern Ghats along with some plains and valleys lying between the hill ranges. These hill ranges also contain extensive plateaus, most of which have elevations between 300 to 500 mt. above mean sea-level. This is the largest of the four regions covering about 36 per cent of the total area of the state and consisting of the districts of Koraput, Kalahandi, Phulabani (excluding the northern part of Boudh subdivision), and western and extreme northern portions of Ganjam. The region has the river Tel and its tributaries in the north and Vansadhara and Nagavali in the south-east. In the south-east portion of the region flows the Machhakund which is a tributary of the river Sileru.

The average annual rainfall of this zone is 1,499 mm. while there are local variations.

The southern portion of Koraput subdivision is a plateau with elevation of more than 700 mt. A large part of Kalahandi district with an elevation of about 300 mt. lies between the river Tel in the north and the Jaypur plateau in the south and through which passes the Hatinalla. This area is most suitable for rice. Similarly the plateau at about 700 mt. spreading through Jaypur and Nabarangapur subdivision is suitable for cultivation of various field crops including rice. Most of the other areas of Koraput district are characterised by scattered and sharp isolated hills, sometimes with thin forest but mostly bare. The hills in the area are intercepted with small meandering streams having flood plain terraced and cultivated with rice. Most of the cultivated areas are sloping uplands; rice, ragi, Suan, niger and Kulthi (horse gram) are grown extensively. Turmeric is an important crop grown in this region, particularly in Phulabani. This region is also well suited for growing plantation crops like coffee, orange, hill banana and jack-fruit.

This is another area where orange of good quality can be grown, for instance, in Paralakhemundi and Niamgiri area. Jack-fruits grow luxuriantly in Phulabani district, hill bananas do well in Paralakhemundi area and the Niamgiri hills have extensive plantations of banana, pineapple, jack-fruit and mango. There is a local type of hill banana, known as Pahadi which grows all over the Phulabani district without supplemental irrigation. Other hill bananas growing at higher altitudes and under humid conditions without irrigation are Podasingh, Bookuphata, Muguni and red banana. There are several hilly areas in this region which are ideally suitable for plantation of horticultural crops, including temperate species with mild chilling requirements. Thuamul-Rampur, Kashipur, Lanjigarh and Lakshmipur are potential areas for fruit plantation.

The Coastal Plain

The coastal plain runs from north to south and is between 25 to 100 km. wide in the districts of Baleshwar, Cuttack and Puri. The eastern part of Ganjam district also comes within this region. The coastal plain is characterised by a number of deltas mainly formed by the rivers Subarnarekha, Mahanadi, Brahmani and Baitarani and their tributaries. This zone covers about 18 per cent of the total area of the state, also includes two lakes—Chilika and Sara in Puri district.

The average annual rainfall of this region is 1,454 mm. which gradually decreases from north to south. Ganjam though included in this region has comparatively low rainfall of 1,247 mm. a year.

The coastal belt, particularly in north Baleshwar, Cuttack and Ganjam are exposed to periodic cyclones.

Being influenced by the sea, climate of this region greatly differs from that of the other three regions. The relative humidity of the plain is highest throughout the year with a minimum of 70 per cent.

For crop production this is the most important region. The lands are suitable for growing rice and jute. Plantation crops like coconut, cashew and banana are grown extensively in this region.

The coastal belt is eminently suitable for coconut, sapota, cashew and banana. Expansive waste lands along the sea coast can be put under sapota, cashew-nut and coconut. The canal embankment alone can accommodate 35 lakhs of coconut palm.

Soils

Occurrence of different soils in the state are closely related to broad physiographic divisions and their genesis is dependent on micro-topographical situation and geomorphology of the different land types. The following soils are represented.

(a) Red soil (Alfisols), (b) Laterite soil (Ultisols & Oxisols), (c) Black soil (Vertisols), (d) Mixed Red and Black soil (Association of Ultisols and Vertisols), (e) Red and Yellow soil (Ultisols), (f) Brown Forest soil (Humults), (g) Alluvial soil (Entisols), (h) Coastal Saline and Sandy soil (Haplaquents & Ustipsamments).

Red Soil (Alfisols)

The main features of red soil are —(i) light texture, porous and friable structure, (ii) absence of lime kanker and free carbonates, and (iii) soluble salts are present in a small quantity, usually not exceeding 0.05 per cent. The common form of red soil is a sandy clay, coloured by iron oxide. They do not contain laterite mass within the profile and are uniformly red in colour. These soils are moderately acidic and are generally deficient in nitrogen, organic matter and lime. The clay fraction of the red soil is rich in kaolinite type of clay mineral with varying proportion in illite. Phosphate fixation is a problem in these soils due to presence of free iron and aluminium oxides. They have generally low water holding capacity. However, with green manuring and application of fertilisers, these soils can be profitably managed for cultivation of fruits, vegetable and other cash crops although at present the main crops grown are paddy, maize and millets.

Laterite Soil (Ultisols and Oxisols)

These soils contain laterite mass at some depth of the profile. The laterite mass is characterised by compact to vesicular, sometimes honeycombed structure, composed essentially of a mixture of the hydrated oxide of aluminium and iron with small amounts of manganese and titanium oxides. These soils are usually excessively drained and porous. They can be broadly divided into high level and lower level laterites, the former being usually of a pale colour, gritty and shallow, and poor in nutrients and the latter of finer texture and darker colour and contain a fair amount of humus. Organic matter, nitrogen, available phosphoric acid and potash and lime contents are low, though total phosphoric acid and potash content may be high, PH. is fairly low. The clay fraction constitute predominantly kaolinite type of clay minerals.

Black Soil (Vertisols)

The main features of the black soils are—(i) the depth varies from one to two feet to several feet, (ii) loamy to clayey texture, (iii) heavy cracks in summer season, and (iv) presence of lime kanker zone at some depth of profile and free carbonates mixed in the soil. The soils are generally rich in montmorillonitic groups of minerals, deficient of nitrogen, phosphoric acid and organic matters, but potash and lime are usually sufficient.

Mixed Red and Black Soils (Association of Ultisols and Vertisols)

The occurrence of red and black coloured soils side by side in certain areas has been observed. In some cases, red soils may occur in higher elevations, while black soils have a lower topographic situation.

Red and Yellow Soils (Ultisols)

Side by side, red and yellow soils are seen in some areas, which are quite heterogeneous in texture, depth, colour and other characteristics, depending upon the topography. Soils of upland are comparatively lighter in texture, have yellow and reddish shades of colour; are shallow and lower in depth and well drained. Ferruginous concretion invariably are met within these soils. The soils of the low lying areas especially in bottom land situation show colluvial and alluvial deposits, are of heavy texture, deep show pale yellow, greyish and olive shades of colours and sometimes exhibit characters associated with wetness, that is mottling and concretion.

Brown Forest Soils (Humults)

These may be mainly brown soils formed in association with forest growth. Colour may range from red, yellow to dark brown depending upon the organic matter which is generally very high. They are rich in nitrogen and organic matter and are slightly acidic.

Alluvial Soils (Entisols)

These soils have variable characteristics and the colour may range from light grey and pale yellow to deep grey and the texture may range from coarse sands to clays depending on the type of alluvium. Generally fertile, but soils with low status of nitrogen and available phosphoric acid are met with. They usually contain sufficient quantity of potash, soil reaction is slightly acidic to natural.

Coastal Saline and Sandy Soils (Haplaquents & Ustipsamments)

Alluvial soils with high total soluble salts come under this category. The salinity of the soil occurring near sea is due to tidal inundation.

Successful management of such soils depend on the removal of salts by leaching and drainage practices and the check of inflow of backwater through construction of embankments.

Aeolian shifting sand-dunes are also found in the coastal tract. High soil temperature and shifting nature of these dunes by wind erosion is the problem of these areas. Plantation of casurina and cashew has been found to be the best for stabilisation of sand-dunes. Experimental plantation of Sapota in such areas has given promising results.

The districtwise distribution of different soils is given in Appendix I.

Climate**Rainfall**

Like the rest of the country the state is influenced by the monsoon climate characterised by high temperature from March to May and high rainfall from June to September. Major source of rainfall is from the south-west monsoon. It also receives a small quantity of precipitation from the retreating monsoon in the months of October-November when occasional cyclonic storms are also experienced.

The annual average precipitation is 1482 mm. out of which 76 per cent is received from June to September. Mayurbhanj district in the northern plateau receives the highest rain while the least is received in Ganjam district in the coastal belt. July is the rainiest month while January is the driest month.

The constraints imposed by precipitation patterns are two-fold. First is its concentration during the relatively short monsoon season leaving a substantial period in the year during which water requirement of crops exceeds rainfall. Second, at both ends of the monsoon there are periods of highly variable precipitation.

Temperature

Orissa experiences an annual average temperature of 26.2°C. The lowest temperature (17°-20°C) are experienced in December-January and the highest in May (31.2°C). The temperature remains around 27°C in July, August and September.

Notwithstanding this, the fluctuation in temperature from one region to another is very marked. Even different places in one revenue district experience varying temperatures. The western districts experience higher temperature. The temperature in May and June for Sundargarh, Sambalpur, Balangir, Kalahandi and Mayurbhanj vary between 32°C - 34°C . The maximum temperature experienced in May is 45°C - 46°C , which continues for about two weeks. Koraput, Phulabani and Kendujhar are generally cooler due to higher elevation.

The average temperature in winter varies there from 17°C .- 19°C . Parts of Mayurbhanj (Similipal hills), Koraput, Phulabani and Kendujhar districts experience 3°C .- 4°C . or lower temperatures in the morning for many days during the winter months. Below freezing temperatures are experienced in isolated hill locations like Tinadiha in Similipal hills, Belghar in Phulabani district, Niamgiri in Koraput district, etc. The low temperatures in coastal districts, however are usually between 10°C .- 12°C . The difference between the average winter and summer temperatures is 9.8°C . (28.4°C .- 18.6°C .) for Koraput whereas for Kalahandi it is 16.7°C . (20.1°C ., and 36.8°C .- 20.1°C .) and for coastal districts it is 10°C . (31°C .- 21°C .)

Temperature records are not available for all the representative places. The available figures are only close approximations. The Agriculture department has established horticultural centres at different places, such as, Kalikaprasad in Similipal foothills of Mayurbhanj; G. Udayagiri, Baligurha, and Kothagarh in Phulabani district; Kashipur, Patangi, Niamgiri and Semiliguda in Koraput district and Kunar in Kendujhar district. There are other places, such as, Daringbarhi in Phulabani, Thuamul-Rampur in Kalahandi, part of Deogarh subdivision in Sambalpur district and the hilly areas of Paralakhemundi subdivision of Ganjam district which experience much cold if not more. The temperature stands around 0.2°C . for some period. As has been mentioned above, below freezing temperatures are met within certain isolated pockets in the Northern Plateau and the Eastern Ghats region. These places can be exploited for growing peaches, plums, almonds, and a variety of temperate fruits including pears and apples with low chilling requirement. In fact, stray plantations of peaches of indifferent varieties have been observed to bear fruits profusely.

Lower temperature in the hills also help extending the period of availability of fruits and vegetables. Due to low temperature summation, the plants particularly the tropical species come to flower late and also ripen later than in the plains. Flowering in mango is delayed

by 2-3 weeks, so also the ripening period. Similar is the case with *litchi*. Crops of *litchi* are over in the plains by the end of April whereas in G. Udayagiri it stays a fortnight longer and the period of availability of *litchi* is extended longer in higher altitude areas like Lakshmipur in Koraput district. In case of mandarine availability of fresh fruits extends from first week of October in Paralakhemundi hills to first week of April in Pal Lahara areas.

Since low temperature sets in early in the monsoon season, cultivation of temperate vegetables like tomato, cauliflower, beans, etc., and potato is possible during the monsoon in the medium altitude hilly areas. Such situations are also favourable for extension of flowers like roses, dahlias, chrysanthemum, gladiolus and other flowering bulbous plants.

Humidity

There is considerable variation in humidity during different months and at different places. Relative humidity is higher in the coastal tract and lower in the inland districts. In altitudes over 700 mt. above sea-level ripening of mango is delayed and high humidity with early onset of monsoon rains favour building up of insect population. In the programme for mango cultivation, only such early varieties like Subarnarekha, Cheruk Rasam and Bombay Green are being recommended for medium altitude hills. Under high humidity, the robusta banana develop extensive leaf spot disease which is rather limiting its extension in coastal areas. However, plantations of robusta banana in inland districts like Dhenkanal and Sambalpur with low atmospheric humidity have been remarkably free from this disease. On the other hand high humidity is favourable for crops like coconut, cashew-nut, sapota and some spice crops.

Rainfall Zones and Drought Prone Areas

As indicated earlier, the average annual rainfall is 1498 mm. with 65 rainy days. Out of this 1220 mm. is received between June to September. August is the rainiest month, after which the number of rainy days reduces. The average rainy season varies from 120 to 140 days. In an approximate cycle of 3 to 5 years, there are rainy periods extending to 150 days or shortened up to 105 days. Early break of monsoon is associated with many dry spells in the month of October. This is a warning for protective measures of irrigation and moisture conservation. The dry spells of varying duration between 7 to 20 days, occur after middle of September. It is met with once in 2 or 3 years. December and January are the driest months. During this period rainfall varies from nil to 75 mm. Date of break

of monsoon, intensity and frequency of rainfall determine agricultural operation and crop yield. On an average, drought or flood of medium type occurs in every 3rd year while severe type is met with every 6th or 7th year.

From the analysis of data on precipitation and evaporation it is observed that excepting the period between middle of June to 3rd week of October, the evaporation exceeds rainfall. From the month of November till mid-January, moisture in the soil remains in the available range but certain crops may need occasional irrigation. In subsequent months, however, the moisture deficit widens and there is need for supplemental irrigation. During the monsoon period drainage becomes a problem in the lowland areas.

To have a better grasp of rainfall distribution pattern and drought prone areas, it is necessary to codify the amount of precipitation received at different periods. Rainfall received each month is coded into 5 categories using the following limits:—

- (a) More than 30 cm. per month
- (b) 20 to 30 cm. per month
- (c) 10 to 20 cm. per month
- (d) 5 to 10 cm. per month
- (e) Less than 5 cm. per month

The rainfall pattern of each season and of the year is expressed in a coded form using letter and subscript; the letter indicating the quantity of rainfall and the subscript the number of months in the season receiving such quantity. The rainfall pattern in the month and season is presented in parentheses in the middle, preceded and followed by the pattern in pre-monsoon and post-monsoon season respectively (Arakeri, 1972). But letters in the coded form are maintained in order of occurrence of rainfall during the season to represent the picture of sequence and quantity of rainfall of a place in the season and year. The calendar year is divided into three seasons, namely, monsoon (June to September), post-monsoon (October to January) and pre-monsoon (February to May).

For example the code E-4 (B1 A2 B1) DIE 3 would mean that during pre-monsoon period the rainfall is less than 5 cm. per month, and during monsoon and post-monsoon periods the rainfall is

20—30 cm. In June which increase to more than 30 cm. in July and August and again reduces to 20—30 cm. in October and less than 5 cm. per month from November to January. This code helps in framing the idea of progress and regress of moisture/water situation in the field for cropping purposes. The areas of same rainfall pattern are grouped together. Knowledge and information on evaporation, loss of moisture from profile, soil characteristics, and rooting depth of crops at different stages of growth would make the situation clearer. Rainfall data of different places of each district as published by the Meteorological Department, Poona, for the years 1901—50 have been used for this purpose. The state can broadly be grouped into six categories.

E4(B1A2B1) DIE3	E3D1 (B1A2B1) CIE3	E3D1 (B1A2B1) DIE3
E4(A 1B2) DIE3	DIE (A2B2) CIE 3	DIE 3(A2B2) DIE 3
Sambalpur	Mayurbhanj	Dhenkanal
Sundargarh	Kendujhar	
Balangir	Phulabani	
Kalahandi	Cuttack	
E2D2 (B1A2B1) CIE 3	E3D1 (C1B3) C1D1E2	E3D1 (B1A2B1) CDE2
D2E2(A2B2) CIE 3	DIE3(A2B2)GD E2	DIE3(A2B2) CD E2
Koraput	Ganjam	Puri
Baleshwar		

Climate Zones and Soil Resources

The soil resources and the climatic pattern of an area are prime factors in determining the productivity of the land. By superimposing the climatic zones on the broad soil groups a relationship for focusing the soil-plant-climatic interactions can be developed for deciding the cropping pattern and crop sequences in various agroclimatic zones. Meteorological data from 10 stations have been examined and potential evapo-transpiration determined by using Pan-Mam's modified formula.

On the basis of above study the soil moisture status throughout the year has been divided into four different parts, i.e., moisture surplus, moisture utilisation, moisture deficit and moisture recharge. On the basis of aridity index, the state can be divided into four zones.—

- (1) High moisture deficit zone (45 and above) comprising the north-western districts.
- (2) Moderately high moisture deficit zone (40 to 45) consisting of south coastal districts.
- (3) Medium moisture deficit zone (35 to 40) spreading over the central table-land, and
- (4) Low moisture deficit zone (35 and less) comprising north coastal districts of Orissa.

Besides expressing the intensity of moisture deficit, these zones show a trend in the duration of their respective moisture utilisation period. From a minimum of two months for high deficit zone it increases to a maximum of 5 months for low deficit zone. The crop varieties may be chosen according to their duration befitting to the respective zones and the crop availing the residual soil moisture may be synchronised with the moisture utilisation period. There is necessity to install more meteorological stations in the state to take into account the local variation within soil-crop-climatic interaction.

2. LAND RECLAMATION AND UTILISATION

Land and soil play the most vital role in the state's economy. Land is the chief source of an Oriya farmer. Therefore, agricultural economy of the state is much dependent on the productivity of land. Although paddy is the principal crop, the average per acre yield of this crop is very low. Similarly, there is scope for increasing the productivity of other crops in the state. Faulty land use is one of the important causes leading to low and poor harvest. No systematic work has been done for proper utilisation of the high elevation and hilly slopes comprising about one-third of state's total cultivated area and primarily inhabited by the Adivasis. In these areas ample scope exists for plantation of fruit crops and other perennial species Monsoon potato, sweet potato and yams as well as off-season vegetables in the monsoon like cauliflower, beans, tomato and the like can be suitably grown in many of these areas.

Tribal Agriculture

The tribals are in general below the poverty line and perhaps the poorest community economically. In view of their development in isolated social groups in inaccessible hilly areas, several peculiar difficulties inherent to such environmental situation have been perpetuated.

The land cultivated by tribal communities can be classified into three categories: Podu land, Goda land and Jhola land.

Podu Land or Shifting Cultivation

Podu lands are located at higher reaches of the hill slopes and a specialised form of shifting cultivation is practised by the tribals on the hill slopes.

Podu cultivation is a specialised form of shifting cultivation practised by the Adivasis in the tribal hilly areas of the state.

The tribal people have been allowed and very often forced to develop in isolation and in geographic situations which are different from the plains. Under similar situations in the tropics, throughout the world, practically identical agricultural practices have been developed. The Podu or shifting cultivation of the tribals of Orissa is the same as *caingin* in the Philippines, *Humax* in Java, *Ladng* in the Indies as a whole and Malaya, *Taungya* in Burma, *Tamrat* in Thailand and *Ray* in Indo-China. Practically without exception, it is clearing in either primeval or second growth forest. In shifting cultivation the same piece of land is not used every year. Instead the trees are cut down from a small forest patch at periodic intervals. As much of the woody growth as possible and conveniently burnt down and among the charred stumps and half burnt tree trunks crops like millet, upland rice, maize, oil-seed (niger), yams and a variety of legumes are planted. As forest land is generally free from grass and the soil is rich in humus and well supplied with ash of burnt plants after clearing, it produces a very good or even excellent harvest. During the first year, however, the clearing of jungle and burning of bush wood is not thorough and, therefore, in the second year again the clearing and burning process is repeated and an equally good crop is obtained during the second year. The grass and weed invade the clearing and the fertility of the soil declines. The peasant abandons his old Podu and burns a new patch of forest. The old plot reverts, under favourable condition, to second growth forest and in the course of the next 8 to 10 years is ready again to be cut and burnt and to be used for new planting of shifting cultivation.

In shifting cultivation there is less labour involved than in any other methods of cultivation and the work is more evenly spread over the year, an advantage where labour is relatively scarce.

In shifting cultivation there is rotation of the fields instead of rotation of crops as is done in settled agriculture. Although this is the general pattern of shifting cultivation throughout the tropical forest of the world, depending on agroclimatic situations of individual regions, specific shifting cultivation methods have been developed. Even in Orissa, the mode of shifting cultivation in Koraput hills are different in details from what practised in Ganjam Agency or in Juangpirh and Bhuyanpirh.

Shifting cultivation is a logical and economically justifiable form of land use wherever there is a large amount of land and primitive economy exists. From a social point of view, no objection can be raised, if after each occupation the fertility of soil is regained. Shifting cultivation from agricultural point of view is not also objectionable so long as vegetation and the fertility of the soil are restored by nature. However, with increase in population there is greater demand on the forest land for cultivation in intervals less than 8 to 10 years before there has been rejuvenation of the native vegetation and restoration of the soil fertility by nature. Under such situations there is a positive decline in the land resources due to erosion.

The advantages of Podu cultivation have been discussed earlier. Because of these the tribal farmer continues to cling to this practice even though it has become increasingly detrimental to silviculture and resulted in severe soil erosion. There are two other social factors which have helped continuance of this practice.

Whenever the tribal farmer has developed some good terraced lands in the valley, the middlemen from the plains have cheated him out of the same. Failing this, the crops raised in these cultivated lands are taken on mortgage in advance, may be for several years by the middlemen. Thus the tribal farmer is never sure of his right on his land in the valley and the produce that he harvests from the same.

The hill slopes under *podu* have never attracted the attention of the middlemen for obvious reasons.

Again the harvests from the *podu* area are obtained in instalments in very small quantities and, therefore, escape the collection of the middlemen. The grains and pulses harvested at periodic intervals (may be twice in the week) is available for family consumption of the tribal people. Thus *podu* cultivation has evolved as a method for the survival of the tribal people.

As has been indicated earlier the tribal people depend upon forest trees for their food. Because of this, even in *podu* area the fruit plants are allowed to grow and are never cut. A list of trees which are protected in the *podu* area by the tribal people is given below.

Mango	.. <i>Mangifera indica</i>
Mahua	.. <i>Bassia latifolia</i>
Kendu	.. <i>Diospyros embryoteris</i>
Tamarind	.. <i>Tamarindus indica</i>
Banyan	.. <i>Ficus banghalensis</i>
Marking-nut	.. <i>Anacardium vahli</i>
Fig	.. <i>Ficus glomerato</i>
Woodapple	.. <i>Aegle marmelos</i>
Jack-fruit	.. <i>Artocarpus integrifolia</i>
Salapa	.. <i>Caryota urens</i>
Jamun	.. <i>Eugenia jambolana</i>

The jack-fruit plant is rather susceptible to fire. Thus in the Podu hill slopes the jack-fruit does not survive. The jack-fruit plants are, however, grown and protected with care at the base of the hills and in the homestead lands. In the homestead land and kitchen garden, banana, guava, jack-fruit, etc., have been grown. The general performance of these plants are found to be satisfactory.

As has already been indicated above, with increasing population, the cycles of Podu cultivation are at shorter intervals, before regeneration of natural vegetation and restoration of soil fertility by nature.

As a result, crop production from Podu lands is progressively reduced and there is considerable soil erosion making the hill slopes unsuitable for any vegetation. Thus the tribal economy which is based primarily on *podu* cultivation is in jeopardy.

Extent of Podu Cultivation

No reliable data on the extent of Podu cultivation in the state is available. The eye estimate, to which allegiance is still paid, is that of the State Forest Inquiry Committee in 1959 as per which over 31,07,988 sq. km. (12,000 sq. miles) of the state are under *podu*. Two lakhs of families are supposed to be engaged thereunder. 19 years later we do not have a more reliable or up-to-date set of figures to go by. The first requirement is to make an assessment of the spread of Podu in the state. However, according to the bench-mark survey conducted by the State Tribal and Harijan Research-cum-Training Institute, Orissa, the total population engaged in shifting cultivation is about 7 lakhs and the area affected is about 37,000 sq. km.

Stages in Podu Cultivation

Depending on the period for which a hill slope has been subjected to cycles of *podu* cultivation and the frequency of such cycles, the hill slopes are in different stages of depredation. On one extreme are the lands which still have some of the original native vegetation with adequate quantities of leaf mould and forest litter on the ground so that even delicate fruit plants like mandarine, sweet lime, lemon, etc., can be sustained without supplemental irrigation. On the other extreme are the eroded hill slopes, where the native rocks have been exposed which cannot even support hard perennial grasses. Thus, the treatment of the *podu* areas vary from location to location.

The State Government have initiated a programme to rehabilitate the tribal people by rationalising *podu* cultivation and providing opportunity for gainful employment. Since the family labour and the hill slopes are the only two assets of the tribal people the strategy should aim at developing a stable system of agro-horticultural production from these hill slopes through human labour and organise processing and marketing facilities. Poverty of the tribal people is so acute and the *podu* problem is so widespread that it may not be possible in the near future to achieve any significant betterment of the existing situation. The present attempt is an experiment to develop a model for tribal development. The programme, therefore, has been kept flexible so as to fit into the special situations of specific tribal communities and the same will be modified/re-oriented in consideration of field experience.

Goda lands

The Goda lands which are unbunded high lands situated just below the hill slopes have not been terraced and is now growing in different crops of early paddy, millets, and pulses. Due to poor nutrient status of the soil and low water holding capacity, the Goda lands are not capable of sustained annual cropping. As in the *podu* hill slopes a modified form of shifting cultivation is adopted for the Goda lands. Annual crops like maize, millet or pulses are taken up in one year and the land is left fallow for a couple of years for recuperation of soil fertility.

Jhola lands

As the lowest level in the valley, the lands are terraced for sustained paddy cultivation every year. The lands are generally rich and grow a mixture of paddy varieties. The proportion of this Jhola lands, however, is very low in comparison to the Goda lands and the *podu* hill slopes. Very often the middlemen from the plains have taken over the most productive terraced lands from the tribal people so that he is left with mainly the unbunded Goda lands along the foot hills and the *podu* hill slopes.

Land Utilisation

Orissa with its total geographical area of 15,540 thousand hectares the net sown area covered under different crops for agricultural purposes accounts for 59.90 thousand hectares, of which the gross area irrigated works out at 18.54 thousand hectares with a gross cropped area of 82.75 thousand hectares during 1982-83. Besides these, the area under miscellaneous tree crops accounts for 409 thousand hectares and the area under forests accounts for 5,996 thousand hectares.

The culturable wasteland of the state accounts for 245 thousand hectares while the presence of the barren and uncultivable land is to the tune of 265 thousand hectares, and the land under current fallow and other fallows are 585 thousand and 197 thousand hectares respectively. Besides these, the quantum of land under permanent pastures and other grazing land accounts for 559 thousand hectares. Land utilisation pattern in Orissa during 1982-83 is given in Appendix-II. The cultivated area according to the physical situation are generally divided into high, medium and low lands. The up-lands (high lands) are generally put under crops like maize, millets, upland paddy, Arhar, etc., whereas the medium lands are put under medium duration paddy maturing by November. The low lands are put to long duration paddy which matures by the end of December. A district-wise break up of high, medium and low lands and the area under Kharif paddy grown under different categories of land; high, medium and low is given in the table overleaf.

TABLE 1

Type of Land and Kharif Paddy in Orissa in 1978-79

Area in 000' hectares

Name of the District	Cultivated Area				Kharif Paddy Area			
	High land	Medium land	Low land	Total	High land	Medium land	Low land	Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Baleshwar	66	173	216	455	3	169	214	386
Balangir	174	170	124	468	84	64	119	267
Cuttack	210	270	277	757	45	256	271	572
Dhenkanal	219	134	125	478	55	86	121	262
Ganjam	150	186	174	510	7	161	169	337
Kalahandi	280	134	100	514	102	78	96	276
Kendujhar	159	120	44	323	65	114	43	222
Koraput	537	264	124	925	71	183	118	372
Mayurbhanj	205	140	102	447	117	136	101	354
Phulabani	145	66	29	240	27	33	28	88
Puri	103	171	221	495	16	141	216	373
Sambalpur	278	302	108	688	153	221	102	476
Sundargarh	177	99	52	328	123	48	51	222
Orissa	2703	2229	1696	6628	868	1690	1649	4207

It may be seen that out of the total area of 42,07,000 hectares under Kharif paddy about 8,68,000 hectares are grown under high lands. Most of the high land areas are not suitable for Kharif paddy. With slight variation in monsoon pattern, the paddy crops grown in the high land areas are severely damaged.

Agriculture is the prominent sector in Orissa's economy contributing 51 per cent of the state's total domestic products in 1971. About 80 per cent of the total population depend directly or indirectly on agriculture and 76 per cent of the working force is engaged in it.

Some distinctive features of agriculture in Orissa which have relevance to planning are—the pressure of population on land (about 76 per cent of landholders are small and marginal farmers cultivating only 40 per cent of the land) and the inadequacy of irrigation (only 28.3 per cent of the cultivable land are irrigated). Unlike in the past, when increase in agricultural production was achieved through expansion of area, future improvement in production has now to strive for vertical growth.

As has already been indicated, about 40 per cent of the geographical area of the state has been exploited for agricultural use. The exploitation has been maximum in the coastal districts of Baleshwar, Cuttack, Puri and Ganjam which have extensive areas of fertile alluvial soil. Detailed descriptions of the physical divisions of the state, climate, rainfall, soils, etc., have been given earlier. In short the soils can be grouped into residual and transported soils. The residual soils of the upland are predominantly red and yellow laterites which are typically highly leached, acidic (PH 5.0—6.50), and low in organic matter and nutrition with high phosphorous fixation. They also tend to be shallow, sandy and erodible on the steeper slopes. Their productivity is, therefore, limited both by fertility and water holding capacity. There are black cotton and brown forest soils in the upland areas which are deeper and finer in texture.

The transported soils found in the lower lands are moderately fertile, slightly acidic, deep and more productive than the residuals.

Temperatures in Orissa are adequate for cropping of all crops although some crops such as wheat are limited by lower winter temperatures. Heavy cloud cover during the monsoon and shorter daylight hours in the winter are also limiting factors. However, the principal climatic constraints in Orissa are caused by the pattern of rainfall distribution. Excepting exceptional poor years, total precipitation cannot be regarded as a major constraint anywhere in the state. However, over 80 per cent of the rainfalls during the monsoon period is from middle of June to middle of October only.

Distribution of rainfall is also very unreliable, particularly at the beginning and the end of the monsoon. The onset of monsoon is critical since with the available implements and draft animals, land preparation, sowing and raising of nursery plots cannot be done unless there is a break of monsoon towards the end of June. There has been increasing probability of damaging water stress after mid-September.

The present cropping situation and potential for improvement in cultural practices are dictated mainly by the micro relief within the cropped area. On topography alone the cultivated lands are divided into different classes like upland (41%), medium land (34%) and low lands (25%).

Out of 60,97,000 hectares of net area sown hardly 11,48,000 hectares received irrigation during 1978-79 which accounts for 18.83 per cent of net area sown. Thus over 81 per cent of the net area sown is dependent on monsoon rains for crop production.

Soil Conservation

Soil erosion is a serious problem in the state where about 47 per cent of the total geographical area is subjected to hazards of erosion both by water and wind. Whereas water erosion is rampant in the inland and hilly districts of the state, wind erosion is conspicuous in the coastal area. With soil erosion, there is progressive decline in soil fertility and development of hills and gullies, sand casting on agriculture land, narrowing of the water courses through deposition of silt and sand in river beds. In addition to the above, podu cultivation in Kalahandi and Koraput and other agency tracts has accelerated the problem. The Soil Conservation Organisation of the Department of Agriculture has been taking steps to control the menace of soil erosion through implementation of various programmes all over the state. Special attention has been paid for the hilly districts and the catchment area of river valley projects where the problem is more acute. Different soil conservation measures, such as contour bunding, field bunding, land levelling, land shaping, development and management of pasture lands, plantation miscellaneous tree species like cashew-nut, sisal, coffee, teak, gambhar, sisoo, etc., in large scale on Government waste lands have been taken up. In addition to this, water harvesting structures, diversion weirs in the vulnerable watersheds and in the river valley catchments have been done. Attention is now being given by the department to take up comprehensive measures in a watershed. The following are the different soil conservation measures which have already been taken up.

PROGRESS FROM INCEPTION TO 1979-80

1. Contour bunding	1,03,109 ha.
2. Bench terracing	200 ha.
3. Stone terracing	1,982 ha.
4. Field bunding	1,028 ha.
5. Cashew plantation	38,835 ha.
6. Coffee plantation	352 ha.
7. Sisal plantation	2,392 ha.
8. Pineapple	60 ha.
9. Lemon grass	123 ha.
10. Miscellaneous plantation	11,695 ha.
11. Gully control	1,590 ha.
12. Stream Bank Erosion Control	913 km.
13. Water Harvesting Structure	78 units
14. Farm Pond	74 units.
15. Acid Soil Reclamation	28,689 ha.
16. Land Reclamation	6,834 ha.
17. Land Development	8,496 ha.

It has been observed that adoption of contour bunding and terracing in the agricultural lands help in control of sheet erosion. This also provides scope for conservation of soil and moisture in addition to soil fertility resulting in higher crop yield. The plantation programme adopted on the eroded government waste lands provide protective canopy to the soil against water erosion and conserves soil and moisture thereby increasing the ground water potential of the area to a considerable extent. These plantations particularly cashew-nut, sisal and coffee have started yielding income to Government exchequer in addition to improving the ecological balance of the region. Mechanical structures like farm ponds, water harvesting structures, diversion projects, etc., provide scope for storage of rain water for utilisation as life saving irrigation to the crops in the critical periods. Also these projects keep the soil mass moist around the project area encouraging the farmers to grow a second crop.

The farmers of the state have gradually realised the beneficial effects of soil conservation and they are now coming forward to adopt

such measures in their own lands. Required technical guidance for such soil conservation measures by private farmers is being provided by the Department. Financial assistance by way of loan is being obtained through co-operative and commercial banks under Agriculture Refinance Development Corporation scheme (since renamed as NABARD). Subsidy support from the agencies like Small Farmer's Development Agency/I. T. D. P./D. P. A. P. are being provided for soil conservation measures by the farmers in their own fields.

Change in cropping pattern

The changes in cropping patterns in Orissa between 1971-72 and 1978-79 are given in Appendix-VI. As has been indicated above there has been a progressive increase in the net and gross cropped area in the state during the period. In the year 1971-72 out of the gross cropped area of 6,874,000 hectares, the area under total food crops was 5,949,000 hectares (6,416,714 in 1982-83) which accounted for over 86 per cent. The area under paddy was 4,646,000 hectares, i. e., 78 per cent of the total area under food crops. (During 1982-83, the paddy area was 4,058,350 hectares). During 1978-79 the gross cropped area increased to 8,275,000 hectares recording an increase of over 20 per cent. During this period, however, there was a shift towards non-food crops and although the area under total food increased, (from 5,949,000 hectares in 1971-72 to 6,679,000 hectares in 1978-79) on the basis of the gross cropped area, the area under food crops was reduced (from 86.5 per cent during 1971-72 to 80.7 per cent during 1978-79). During this period there was a downward trend also in the total paddy area which was 65.5 per cent of the total area under food crops in 1978-79. During this period the total area under total cereals remained more or less static with a minor increase of 0.5 per cent (from 5,088,000 hectares in 1971-72 to 5,113,000 in 1978-79). Under the new 20-point programme of the Prime Minister, the emphasis has been shifted from paddy and irrigated crops to non-paddy and dry land crops. The directives given to the State Government under points (1) and (2) of the said programme are (1) develop and disseminate technologies for dry land agriculture and (2) take special efforts to increase production of pulses and vegetable oil-seeds.

There was over 9 per cent reduction in the area under winter rice. The area under autumn rice which is mainly grown with short duration varieties registered an increase of about 8 per cent. Substantial increase in area under wheat, maize, ragi and other cereals were achieved during this period. With a marginal area of 21,000 hectares under wheat during 1971-72 there was a three-fold increase of the

area, i. e., 62,000 hectares under wheat during 1978-79 (64,017 hectares in 1982-83). Similarly the area under maize increased from 75,000 hectares to 1,31,000 hectares being 74.6 per cent increase (1,59,671 hectares in 1982-83). Similar increase in the area was achieved in case of ragi. In view of the vagaries of nature conscious efforts has been made by the Directorate of Agriculture and Food Production to bring larger areas under non-paddy cereals particularly in the high land areas of the state.

Significant breakthrough was achieved in pulse production and there was over 80 per cent increase in the area under pulses between 1971-72 (8,61,000 hectares) and 1978-79 (15,66,000 hectares). In 1982-83, it was 16,16,125 hectares.

In all the non-food crops like oil-seeds, fibre crops, sugarcane, etc., there has been an upward trend in the area under cultivation. The most significant among these areas was the 95 per cent increase in the area under oil-seeds which increased from 3,40,000 hectares during 1971-72 to 6,64,000 hectares during 1978-79 and to 8,49,613 hectares in 1982-83. In case of fibre crops there was an increase in the area to the extent of 14 per cent and sugarcane area increased by about 48 per cent.

Vegetables, spices and condiments have also shown upward trend. In the total area of non-food crops there was 78 per cent increase in the area between 1971-72 (8,42,000 hectares) and 1978-79 (15,02,000 hectares).

The area under non-food crops has registered an increase of 78 per cent between 1971-72 (8,42,000 hectares) and 1978-79 (15,02,000 hectares). In comparison to the gross cropped area the proportion of the area under non-paddy crops has increased from 12 per cent in 1971-72 to 18 per cent in 1978-79.

During this period the area under summer rice with traditional varieties was reduced from 56,760 hectares to 7,780 hectares (further reduced to 5,790 hectares in 1982-83) and the area high yielding varieties during summer increased from 1,50,380 hectares to 1,57,200 hectares. In 1982-83, it was 2,10,560 hectares.

3. AGRICULTURE INCLUDING HORTICULTURE

Cereals

Rice

Kharif rice constitutes nearly 94 per cent (90.50 per cent in 1982-83) of the total rice production of Orissa. Of the 6.00 million hectares of net area sown, the area under Kharif rice in 1978-79

was 4.21 million hectares. Most of it was grown under rainfed conditions. The production was 4.19 million tonnes giving an average yield of 9.96 quintal/hectares. The area under high yielding varieties constitutes about 17 per cent of the total rice area in Kharif season. It is a matter of regret that inspite of heavy investments in agriculture and irrigation over the last 6 plan periods, there has not been any appreciable increase in rice productivity in the state. The yield has remained virtually static over the last two decades and is one of the lowest in the country. Some of the important problems confronting the growth in productivity of rice are : —

1. Uncertainties of rainfall.
2. Lack of adequate moisture retaining capacity of the soil in inland districts and water-logging conditions in coastal area.
3. Sub-optimum light intensity during July-September.
4. Want of suitable varieties and technology of rice production under rainfed situations.
5. Want of an efficient system of seed multiplication and distribution.
6. Time-lag in the breeding of a variety and its adoption by farmers.
7. Unremunerative prices.
8. Non-availability of modern inputs in difficult areas.
9. Weak extension system.

Of the total rice area, about 19 per cent is covered under autumn rice. This includes the bulk of area under the short duration high yielding varieties. Rainfall during Kharif season (June-September) is generally erratic and frequently inadequate. The average annual rainfall is about 1500 mm. ranging from 1300 mm. to 1650 mm. in different districts. About 75 per cent of it occurs in about 60 days during the four months from June to September. Besides, in one year compared to the next variation in a district might be as high as 50 per cent. Due to this erratic distribution, periodic drought spell and moisture stress develops at critical stages of growth and even in the ripening stage. Under many of the soil and topographical conditions in the state the effect becomes extremely damaging. That is why the yield of rice from uplands is generally poor and is unpredictable. The yield rate of autumn rice from 1960-61 to

AGRICULTURE AND IRRIGATION

1977-78 varies from 2.94 quintal/hectare to 7.10 quintal/ha., and is about 50 per cent of the yield of winter rice. Other limitations of the uplands are excessive weed growth, poor nutrient utilisation, inadequate crop stand. Whereas attention is being given to educate the cultivators on low-cost technology and non-monetary inputs to meet different situations, it is necessary to have suitable plant types capable of adapting to the different stresses in a reasonable degree.

Semi-dwarf varieties possessing desirable strains are not many for cultivation in uplands and medium lands. These varieties have greater photosynthetic activity rate under low lights. Some of the very early varieties like Parijata, Suphala, CRM 13-4132 though not highly responsive to nitrogen, mature in about 100 days or less and are suitable for upland rainfed condition with uneven distribution of rainfall.

Among the early duration varieties the following are suitable :

Varieties	Duration in days
Annapurna	100/110
Cauvery	105/116
Supriya	105/115
Pusa 2/21	110/115
Kalinga-II	110/125

Due to time-lag in the release of varieties and their adoption by farmers, and spread of high yielding varieties, a programme of seed kit distribution has been launched in the state. Four varieties of H. Y. U., seeds have been selected for each Village Agricultural Worker (V. A. W.) Circle, four seed kit bags containing 5 kg. each of 4 different varieties are being sold to 4 selected cultivators in each village by the V. A. W. Production of relevant H. Y. U. seeds has been organised in the agriculture farms in the districts. In this programme attention is being given to larger coverage of high lands and medium lands under short duration high yielding varieties so that the lands can be free early for taking a second crop with the residual moisture, if available. Further from the produce of these areas seeds are made available to other farmers of the locality. As against 5 lakh hectares under the high yielding paddy during 1977-78, the achievement during 1978-79 was over 7 lakh hectares.

Efforts have been made to advance sowing of paddy and raising of community nursery for early transplanting for better stand of crop and escape major pest attack.

One of the major constraints in increasing yields of rice is non-availability of inputs in time particularly in difficult areas. The loaning policy of the Co-operative structure has been liberalised and Central Co-operative Banks and the Primary Credit Societies have been instructed to disburse loans and inputs timely.

The procurement price of rice has all along been a disincentive to higher investment and higher production of rice in the state. Rice is also at a disadvantage when compared to wheat.

Three regional Research Stations have been set up at Chiplima in Sambalpur district, Kendujhar in Kendujhar district and Semiliguda in Koraput district representing the three major agro-climatic regions of the state besides the main Research Station of the O. U. A. T. at Bhubaneswar. Thirteen Adaptive Trial Stations have been established, one in each district. Close co-ordination is maintained between the research workers at the University and the extension field staff through the Research Stations. The main emphasis at these stations is focused on rainfed farming and low-cost technology. The specialists at the University also participate in training the Subject Matter Specialists and District Level Extension Officers. Particular attention is given at these training sessions on low-cost technology in farming.

Pulses

Mung and Biri are the most important pulse crops of Orissa. Next in importance is Kulthi which is also used as live-stock feed. Other important pulses in the state are arhar, gram, field-pea and cow-pea.

Between 1970-71 and 1978-79 Mung area has increased from 322,000 ha. to 629,000 ha. (95%). Biri from 202,000 ha. to 346,000 ha. (71%), and Kulthi from 175,000 ha. to 340,000 ha. (94%). Arhar and gram have remained more or less static around 50,000 ha. and 30,000 ha. respectively. Field-pea is grown in about 27,000 ha. and cow-pea in 22,000 ha. but are potentially very important.

Yield rates, have remained very low around 4 to 4.5 quintals per hectare, although trials and demonstrations in Orissa indicate yields of 8 to 10 quintals of Mung, Biri and gram and about

12 quintals of arhar. The short fall, therefore, at the existing level of technology would seem to be about $2\frac{1}{2}$ to 3 times of the present yields.

Orissa's ultimate potential of coverage by pulses under the existing techno-economic syndrome is estimated at 3.8 lakh hectares (as pure crop, catch crop, mixed crop and inter-crop in different cropping systems). For 1979-80, a programme to cover 19 lakh hectares has been drawn up which is 22.5 per cent higher than that of the previous year. The action plans undertaken to reach the targetted coverage are given in the following paragraphs.

(a) Kharif

During 1978-79 the coverage under kharif pulses was 2,48,324 hectares; in 1979-80 this increased to 2,70,546 hectares. In 1982-83 it increased to 4,62,578 hectares.

(b) Rabi pulses are mostly grown under rainfed conditions as a second crop. The extent of coverage depends upon the availability of residual moisture in the soil at the time of sowing. Keeping this in view action plans for Rabi pulses in rainfed areas have been prepared. In 1982-83, 11,53,547 hectares were covered under Rabi pulses. Summer pulses, on the other hand, are grown only in irrigated areas where irrigation is available between March to second week of May.

As compared to the area the growth of production of pulses in the state is poor. The major constraints are lack of high yielding varieties, paucity of improved seeds for large scale distribution to farmers, marginal supply of rhizobium culture due to inadequate production, reluctance of farmers to use fertilizer and plant protection chemicals. To ensure an appreciable growth of production, the State Government have adopted effective strategies under package programme.

Oil-seeds

The oil-seeds are grown both in Kharif and Rabi. The coverage is of the order of 8.50 lakh hectares in 1982-83. The additional potential for raising different oil-seed crops is estimated to be 13.00 lakh hectares. The total coverage under oil-seed crops over a period of time (about 5 to 7 years) can possibly go up to 20 lakh hectares. By the end of sixth plan, the coverage under different oil-seeds was tentatively projected at 14.19 lakh hectares.

Groundnut and mustard are important oil-seed crops grown in the state. The target of production for these crops during 1979-80 were 5.25 and 1.32 lakh tonnes respectively. In 1982-83, actual production was 3.22 lakh tonnes and 0.68 lakh tonnes respectively.

Groundnut

The area and production of groundnut for six years is given below :

Units

A—Area in hectare

P—Production in tonnes

Y—Yield rates in quintal per hectare

Year	Kharif			Rabi		
	A	P	Y	A	P	Y
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1974-75 ..	76701	97181	12.70	26743	44609	16.70
1975-76 ..	77988	83140	10.70	31033	51514	16.60
1976-77 ..	76600	74638	9.74	28127	43983	15.63
1977-78 ..	73401	75216	10.25	45645	69505	15.22
1978-79 ..	76487	87281	11.41	67390	104474	15.50
1982-83 ..	157204	156899	10.00	117519	165305	14.10

Year	Total		
	A	P	Y
(1)	(8)	(9)	(10)
1974-75 ..	103444	141790	13.70
1975-76 ..	109021	134654	12.30
1976-77 ..	104727	118621	11.32
1977-78 ..	119046	144721	12.16
1978-79 ..	143877	191755	13.33
1982-83 ..	274723	322204	11.7

There is an increasing trend in production except in 1976-77 which was a drought year. There is, however, reduction in productivity both in Kharif as well as in Rabi. Reduction in productivity during Kharif is mainly due to fluctuation in weather conditions. 1974-75 happened to be a good year for groundnut. Even slight variation in rainfall pattern affects groundnut production seriously. While low yields are attributable to variations in rainfall pattern, other factors like continuous cultivation of the crop over the same land year after year, inadequate application of nutrients, scant attention paid to correct soil acidity and poor quality of seeds used are other reasons for reduction in yield. Steps are being taken to correct these defects through education and training of farmers with input supply support.

In the irrigated areas low plant population is the main reason. While the area under irrigated groundnut is expanding from year to year, farmers are yet to pay adequate attention to plant population, application of fertilisers and better management of water. In some of the irrigated areas, excess supply of water has also been responsible for lowering the yield. These defects are being corrected through proper education to farmers.

While the main tool for achieving the target is motivation of farmers through the extension agencies, identification of area and supply of seeds are the other important factors on which the success of the programme will depend.

Seed is the most important factor in achieving the area coverage. For the Kharif coverage the seed majority comes from the farmers. The Department supplies AK-12/24 seeds mainly for seed multiplication. The seeds produced from the Rabi crop by the farmers have gone in large quantities for Kharif cropping.

Seed production in selected villages was not taken up in the state as yet for want of adequate quantities of foundation seeds. Multiplication of breeder seeds has been taken up by the Orissa University of Agriculture and Technology since last two years. Foundation seeds multiplication has been taken up in departmental farms but such quantities are very small since the rate of multiplication is very low. A proposal to implement the "Seed Village Scheme" is being thought of. Under this "groundnut seed villages" are located in the districts of Sambalpur, Ganjam and Dhenkanal where Kharif groundnut is cultivated over large areas. In the beginning, truthfully labelled seeds will only be produced.

As a support to increase the area under groundnut, provisions have been made for subsidised supply of pesticides and hand compressions sprayers to groundnut growers during the Kharif and Rabi. In addition to the state plan provisions, input assistance is available to tribal farmers in the sub-plan areas. Besides, input assistance, large number of demonstrations are also organised to propagate groundnut cultivation with recommended practices.

The extension agency has been trained to convey messages to farmers for getting optimum yields from groundnut.

Mustard

Production of mustard was 48,364 tonnes during 1977-78. The target for 1979-80 was to produce 1.32 lakh tonnes against an estimated achievement of 68 thousand tonnes in 1978-79. In 1982-83 the production was only 68,385 tonnes.

The main strategy for achieving the targets is as follows:

- (a) To grow mustard over large areas under available moisture conditions after an early Kharif crop of rice and other cereals, (b) To cultivate mustard as a cash crop in between two paddy crops in major irrigation projects like Hirakud system. (c) To step up the area under mustard in flood prone areas during Rabi seasons.

Emphasis is now being given to grow short duration early varieties of paddy in high and medium lands. Such lands would be released for sowing of mustard during October. An additional area of 1.16 lakh hectares was proposed to be brought under this programme.

In the Hirakud system, irrigation would be available for about one lakh hectare during Rabi season. Out of this about 60 per cent would comprise medium and medium high lands where a substantial portion of the lands would be released from paddy by about mid-October. In such lands mustard was proposed to be grown in 8,000 hectares as a cash crop during the months of November to January. The third crop mainly rice will follow mustard from about mid-January.

In order to encourage mustard cultivation, provision have been made for supply of P.P. chemicals at subsidised rates to the farmers. Similar input assistance is available for tribal farmers

under special central assistance. Motivation of farmers to cultivate mustard over large areas is done through training of farmers under the revised extension system.

Niger, grown over an area of about 1,30,000 hectares, is cultivated mostly in the predominantly tribal areas. At present this crop is being cultivated with minimum investment on marginal lands. The profits from this crop are also marginal. There is no doubt further scope for extending the area under this crop in the districts where this is being cultivated at present. Since this crop does not require much water, its cultivation can also be extended to areas where, moisture is available till about November. The main problem is the seeds. No improved varieties are available at present. The local seed produced in many districts is severely contaminated with the parasite 'Cus-cuta'.

Til

During the year 1978-79 coverage under this crop was 1,62,516 hectares. Selection-14 which is suitable both for Kharif and summer sowing is grown in the state. During Rabi, the farmers use their local seeds to a greater extent.

Farmers have been motivated through the extension agency to adopt improved practices for increasing production.

Other categories like sunflower, castor, safflower are of marginal significance at the present stage of development though the scope for growing castor both in Kharif and Rabi and safflower in Rabi is substantial. Programmes for popularising them and expanding the area under them are proposed to be taken up.

During last six to seven years, steps have been taken to procure improved varieties of mustard and multiply it in the state. The other important crop is groundnut where large scale multiplication of certified seeds is yet to be taken. The main problem is availability of foundation seeds. The Orissa University of Agriculture and Technology have already taken up the responsibility to produce the breeder stock of seed and the department will take-up foundation seeds multiplication. The State Seeds Corporation has been set up to take up certified seed production. Seeds of other varieties require greater attention.

The potential for development oil-seeds in the state is given below.

POTENTIAL FOR OIL-SEEDS IN ORISSA

(hectares in lakh)

(A) Existing coverage	..	6.64	
(B) Additional potential			
1. Diversion from smaller millets on high lands in Kharif (25%)	0.50	Total small millets area 2.30 lakh hectares.	
2. After autumn rice including river beds (25 per cent)	2.00	Total autumn rice area, 9.14 lakh hectares.	
3. In rice fallows with available moisture (after winter rice 20 per cent (Mustard, Linseed, safflower, til).	6.00	Total winter rice area 32.93 lakh hectares.	
4. Cash crop between Kharif and Rabi (irrigated area) mainly mustard.	0.20	Mainly in the Hirakud system.	
5. After the first crop in the tail ends in other irrigation system including medium and minor irrigation projects.	0.30		
6. Third crop after wheat, potato, vegetables, etc., in major projects and lift irrigation points.	1.00	Total area under wheat, potato, Rabi and vegetables 3.24 lakh hectares.	
7. Current fallows, Kharif	..	3.00	Total current fallows 6.28 lakh hectares.
Total	..	13.00	
Total potential			
1. Potential for expansion	..	13.00	lakh hectares.
2. Existing coverage	..	6.64	lakh hectares.
Total		19.64	lakh hectares or say 20.00 lakh hectares.

Jute and Mesta

The following table indicates the coverage of jute which is an important cash crop in the coastal districts.

Year	Quantity of seeds (certified) distributed in qtls.	Area covered under jute in hectares	Per cent covered by certified seeds distributed by the dept. and the other agencies
(1)	(2)	(3)	(4)
1974-75	561.75	47,014	12
1975-76	597.72	37,806	16
1976-77	433.15	46,601	10
1977-78	479.00	48,700	10
1978-79	697.51	49,280	14

Farmers are multiplying their own seeds. About 80 per cent of the area is covered by either of the following varieties, namely,

Capsularies

.. JRC-212

JRC-7447

Oliterius

.. JRD-632

JRD-524

Major area is covered by JRC-212 and JRD-632. The coverage through departmental distribution of certified seeds can at best aim at 20 per cent. The crop being a self-pollinated crop the quality does not deteriorate quickly. Replacement of seed in five years or even more is considered adequate. The departmental supply is mostly confined to new areas and some of the area like flooded tracts where seed production is not possible besides partial replacement in traditional areas. In canal irrigated areas a portion of the crop in a corner of the field is left for seed by many farmers and this seed is utilised during subsequent season. In any case, a seed multiplication programme is being organised.

Area under irrigated jute during the last 5 years is as follows.

Year	Total area under jute in hectares	Area under irrigated jute in hectares	Per cent of irrigated areas
(1)	(2)	(3)	(4)
1974-75	47,014	27,532	58
1975-76	37,806	19,995	53
1976-77	46,501	26,580	57
1977-78	48,700	24,500	50
1978-79	49,280	15,300	31

Some of the canals
were closed for repairs.

Only pre-sowing irrigation is given to jute in canal irrigated areas. In lift points one or two more irrigations are given as the need arise. Irrigated jute in canal areas is also subjected to damage in the event of prolonged drought spells after sowing and before opening of canals for irrigation of Kharif paddy. A proposal for enforcing jute-paddy-pulses or oil-seed rotation in selected commands and for ensuring timely supply of water for sowing of different crops of the rotation is under examination. In lift points, jute cultivation is being emphasised and there is no difficulty in such areas to irrigate jute at the time of need.

Mesta is traditionally grown in the inland districts on high lands. The quantity is, however, small. It is grown by the cultivators to meet their own requirements and not for commercial purposes. It has recently been taken up in Koraput as a money crop. Other important districts growing mesta are Ganjam, Balangir, Mayurbhanj, Kendujhar and Dhenkanal. The statement below indicates the coverage of mesta during the five years from 1974-75 to 1978-79.

1974-75	..	36,728 hectares
1975-76	..	37,389 hectares
1976-77	..	37,643 hectares
1977-78	...	37,000 hectares
1978-79	..	36,640 hectares

The area has remained practically stagnant though the scope for expansion is considerable.

Tobacco

Tobacco cultivation in the state is undertaken mainly for personal consumption. Only in some parts of Koraput district it is cultivated on a commercial scale. The area under tobacco during the five years from 1973-74 to 1977-78 is indicated below:—

1973-74	..	15,411 hectares
1974-75	..	15,427 hectares
1975-76	..	16,744 hectares
1976-77	..	14,768 hectares
1977-78	..	16,564 hectares

The area has remained practically static though there is good scope for expansion.

The ICAR, has sanctioned a scheme for raising virginia tobacco in Orissa. This is being implemented by the Orissa University of Agriculture and Technology since 1979-80. The cropping projects were undertaken at three district agro-climatic centres, namely, Central Research Station, Bhubaneswar; Regional Research Station, Brahmapur and Regional Research Station, Chipilima.

Cashew-nut

Cashew-nut plantation has been taken up in a systematic manner in the state for the last 20 years or so as a soil conservation measure. By now, the soil conservation organization has developed cashew plantation over 24,000 hectares in different districts. The Forest Department which has also taken up cashew plantation in a systematic though some-what limited manner (mainly on coastal sand-dunes and in degraded forests) has by now covered more than 6,000 hectares in different districts. There is good scope for commercial plantation of cashew in this state as it grows well both in coastal region as well as in interior areas. The Orissa Forest Corporation is implementing a five year scheme of cashew plantation over an area of 14,000 hectares of forest land in the districts of Ganjam and Puri. Cashew is a paying crop. It earns foreign exchange besides improving economic condition of the farmers. Realising its importance in preventing erosion and its commercial feasibilities a Cashew Development Corporation has been set up by the State Government for developing plantations on suitable government lands which are not reserved forests and also on private lands. The Multi-State Project offered to the World Bank is intended to be

implemented mainly through this corporation. Under ERRP and IRD schemes extensive cashew plantations have been taken up during the sixth plan period for the benefit of rural poor.

Multi-State Cashew Project

It is proposed to take up plantation over an area of 1,05,000 hectares. Identification of land has been done and draft terms of lease are being formulated. It has been decided to give advance possession of area conforming to the criteria laid down by the Government of India and the World Bank.

Cotton

It is a non-traditional crop in the state. A Cotton Development Programme has started operating since 1974-75 in the districts of Cuttack, Puri, Balashwar, Ganjam, Koraput, Kendujhar, Mayurbhanj and Sundargarh.

The acreage under cotton in 1978-79 and 1979-80 was 7,000 and 5,000 hectares. The production during these years were 7,000 and 5,000 bales respectively. The fall in area and production in 1979-80 was due to prevailing severe drought conditions. It was proposed to increase the area and production of cotton during the Sixth Plan to 20,000 hectares and 21,000 bales. In 1982-83, the area was only 3,340 hectares and production was also 3,340 tonnes.

The following strategy was adopted during Sixth Five-Year Plan for cotton development in the state.

(i) Cultivation of cotton will be extended both under rainfed and irrigated conditions. Hybrid-4 cotton is found to be very profitable in dugwell area. It is proposed to extend the cultivation of this variety in micro-irrigation project areas where paddy is less profitable.

(ii) Educate the farmers through TV training programme and composites demonstrations on improved package of practices for increasing the yield of cotton.

(iii) Multiplication of hybrid cotton and improved cotton varieties for supply of seeds to the farmers.

(iv) Subsidy will be provided on the cost of seeds to farmers.

(v) Provision of plant protection chemicals at subsidised rates to farmers @ Rs. 100/- per hectare.

Sugarcane

The present level requirement of sugarcane/gur in the state is 4.53 lakh tonnes. Production of sugar/gur during 1979-80 was estimated at 2.82 lakh tonnes. In order to make good the difference and to make the state self-sufficient 1.7 lakh tonnes of more sugar/gur have to be produced.

The area and production of sugarcane during the base year 1979-80 was 46,000 hectares and 29 lakh tonnes respectively. It was proposed to produce 42 lakh tonnes of cane by the end of the Sixth Five year Plan (1984-85), thereby increasing the production by 48 per cent. Taking the average production of 70 tonnes per hectare 60,000 hectares were to be brought under sugarcane by the end of the Sixth Plan Period (1984-85). In 1982-83, sugarcane was grown in 51,180 hectares with a production of 3,16,940 tonnes giving an average production of 6.19 tonnes per hectare.

At present, approximately 7 per cent of millable canes is being consumed by the three sugar factories located at Asika, Baragarh, and Rayagarha and in Khandasari units installed at different places of the state. This is considered low. There should be more sugar factories in the state. Taking into consideration the present acreage of sugarcane, establishment of a modern sugar factory at Nayagarh in Puri district has been taken up. It is suggested that Government may take measures to revive functioning of the idle Khandasari units in different places of the state. The present acreage of sugarcane at Nayagarh and Boriguma is about 3000 hectares which is sufficient for establishing two sugar factories.

Fertiliser

Fertiliser consumption in the state slumped down to 49,601 tonnes in 1974-75 compared to 63,018 tonnes in the previous year due to the steep rise in the price of fertilisers. The consumption picked up again gradually reaching a level of 71,791 tonnes of nutrients (comprising 49,879 tonnes of N, 13,799 tonnes of P, 205 and 8.113 tonnes of K₂O) which works out at an average of 9.3 kg. per hectare in 1978-79. This is far below the national average of about 30 kg. per hectare during that year.

The severe drought in 1979-80 pulled down the rising trend of 67,376 tonnes of nutrients (comprising 46,867 tonnes of N, 13,267 tonnes of P₂O₅ and 7,242 tonnes of K₂O). Low consumption of fertilisers in the state is one of the major reasons for low crop yields compared to the more developed states. However, the rate of

consumption again increased from 8.3 kg./hectare in 1979-80 to 11.2 kg./hectare in 1983-84, with wide variation in rate of consumption between the districts.

Irrigation is pre-requisite for effective use of fertilisers. In spite of huge potential for irrigation in the state the net area irrigated up to 1978-79 was only 11.48 lakh hectares or 19 per cent of the total net cropped area of 60.97 lakh hectares. By the end of the Sixth Plan the area under irrigation is proposed to be increased to 18.36 lakh hectares or about 28 per cent of the net cropped area of 6.61 lakh hectares by 1984-85. Rabi irrigation that will be developed by the end of the Sixth Plan will cover an area of 8.47 lakh hectares, thereby increasing the crop intensity to about 160 per cent from the present level of 138 per cent. Due to this increase in irrigated area there will be a substantial increase in fertiliser consumption. It is estimated that at the rate of 100 kg. of plant nutrient per hectare during Rabi season the additional offtake for the increased area during the Rabi season alone will be to the extent of one lakh tonnes.

Increase in the area under high yielding fertiliser responsive crops is another method for increase in fertiliser use. Due to increase in the irrigation potential in the state we should be able to cover a much larger area under high yielding varieties. During 1979-80 the state covered 10.84 lakh hectares under high yielding varieties. It was proposed to increase to 24 lakh hectares, i.e., about 2.5 times of the area under high yielding crops.

With all these strategies the target of 2,18,000 tonnes of nutrients fertiliser by the end of the 6th Plan would appear to be rather modest.

Comparative Yield Rates

The productivity of different major crops in the state is rather low in comparison to All-India averages. A statement indicating the average yield rates of major crops in Orissa and in India during the years 1975-76, 1976-77 and 1977-78 are given in Appendix VII. It may be seen in the table that in case of autumn rice it has varied between 4.5 quintal per hectare to 7.1 quintal per hectare against the All-India averages which have varied between 10.7 quintals per hectare to 13.6 quintals per hectare. In case of winter rice the situation is also of similar order. During the summer season high yielding varieties of paddy are being cultivated in the state. In spite of this the yield rates of summer rice are much lower in comparison to the All-India average. Yield rate of Kharif rice and summer rice in 1983-84 is however,

reported to be 11.48 and 20.00 quintals per hectare giving an average rice productivity of 11.94 per hectare against 9.96, 12.90 and 10.07 per hectare respectively in 1978-79.

Wheat cultivation in the state has been of recent origin and it is grown mostly with high yielding varieties. The average yield of wheat in Orissa is higher in comparison to the All-India average. During the year 1977-78 an average yield of 18.9 quintals per hectare of wheat field was obtained in Orissa against the All-India average of 14.8 quintals per hectare for the year. In case of pulses the yield rate in Orissa is 5.05 quintals per hectare which is slightly lower than the All-India average. When the average yield of total food grains is computed the Orissa average yield comes to 8 to 9 quintals per hectare which is lower than the All-India average yield.

In case of oil-seeds the average yield of groundnut obtained in Orissa is 13 quintals per hectare in 1978-79 which is higher than that of the All-India average. Taking the major oil-seeds into consideration the average yield of these oil-seeds also compares very favourably with All-India average, being 6.43 quintals/hectares in 1978-79 and 7.22 quintals in 1983-84.

In case of fibre crops like jute and mesta the average yield obtained in the state is higher than that of the All-India average.

In case of cash crops like sugarcane, potato, tobacco, etc., the yield obtained in Orissa are lower than the All-India average.

Coconut

The coconut palm is of ancient origin in Orissa. The information on area and production of coconut in the state is rather inadequate and incomplete. According to available estimates, the present (1978-79) area under coconut is of the order of 15,271 hectares with a production of 67.72 million nuts per annum.

Coconut is the most important fruit plant of the state particularly in the coastal region and considerable rate and attention is being paid to this crop because of its high economic returns over a long period of years. Orissa with a coast line of over 500 km. offer ideal agroclimate for coconut plantation in the coastal districts of Baleshwar, Cuttack, Puri and Ganjam. Exploratory trials on coconut plantation in inland districts with high water table or sources of perennial irrigation have also been

successful. Coconut plantations in Serang hills (Ganjam district) at an altitude of about 1,000 metres above sea level produces an average yield of over 80 nuts per annum.

In addition to the above, Orissa state has a perennial irrigation system with a total length of over 10,000 km. of canals. The plantation of coconut on canal embankments has been encouraging. The palms on embankments start flowering early (5-6 years) and hold out the promise of an yield of 80—100 nuts per palm per annum. It is estimated that 3.5 million coconut palms can be planted in the embankments of the existing canal system.

Plantation of coconut palms on the banks of drainage channels, on paddy field bunds, and other non-traditional locations such as back water areas, sub-merged areas, etc., have also been taken up with success. Extensive coconut plantations on drainage channels, paddy field bunds, roadside embankments have been taken up under ERRP and IRD programmes for the benefit of the rural poor.

One of the major constraints which accounts for the perpetual low economic growth of the farmer in the state is the small uneconomic holding on which majority of the farmers operated. The present proposal embraces a pilot programme for economic development of weaker sections of the community with the strategy for compact area plantation for re-settlement of landless labourers with high value coconut plantation with inter-cropping.

In view of the expanded demand for coconut seedlings by the farmers in general, the Forest Department for coastal area shelter belt plantation, the coconut plantation to be taken up by the Maritime and Chilka Area Development Agencies and the coconut plantation to be taken up on canal embankments, the programme for seed-nut collection and raising of seedlings has been suitably augmented. The time lag between the collection of seed-nut and the production of seedling for distribution is about 2 years. The present programme is to collect 12 lakh seed-nuts annually and raise quality seedlings in the 28 coconut seedling nurseries.

It is proved that hybrids with combinations with selected dwarf X tall and tall X dwarf genotypes are superior to the palms obtained from open pollinated seed-nuts. Such hybrid palms come to fruiting earlier and the annual production is 100 nuts on the average, i. e., higher than that of the palms raised from open pollinated seed-nuts.

A small farm at Konarka has been established for production of dwarf (Chowghat Dwarf Orange) X tall (Orissa Elite) hybrid seed-nuts by emasculation of the dwarf and natural cross pollination. To meet the immediate requirements of hybrid coconut seedlings a programme for T X D hybrid seed-nut production has been taken up from 1978-79. T X D hybrid are being produced by undertaking controlled pollination of local elites with pollen from suitable dwarf mother palms.

The hybrid seed coconut production programme in the state has been designed to have the dwarf parents in a particular location in isolation at Tirtol and the selected elite coconut talls are being grown at Brahmagiri. The Exotic Talls which have records of high susceptibility to diseases of unknown etiology are being grown in isolation in the aquarentine plantation at Nimuna along Chilika lake. It is envisaged that on the basis of research results on combining ability available from time to time controlled pollination will be taken up between the selected dwarf and tall parents.

The coconut palm is a victim to serious diseases and pests. It is very high grown and mostly remain beyond the reach of sprayers for control of certain diseases and pests. A Parasite Breeding Laboratory has been established to rear and release parasites against the leaf-eating caterpillars.

Vegetables in Orissa

Soil and climatic conditions of the state are favourable for growing different vegetable crops all the year round. During the Kharif season vegetable cultivation is confined to high lands, back-yards and other places, mostly depending upon the rainfall. Crops include brinjal, cucurbits, Bhindi, cow-pea and a variety of other vegetables are grown extensively both for home consumption and for the market. In medium altitude hills between 700 metres and 900 metres above means sea-level, potato and temperate vegetables like tomato, cauliflower, pea, beans, etc., are grown to a limited extent during the monsoon season. Depending upon irrigation sources, several temperate vegetables including cole crops are grown in extensive scale during the Rabi season. In summer such vegetable like gourds and other leafy vegetables are grown in river beds and near permanent sources of irrigation.

The net sown area under different crops in Orissa is around 60,97,000 hectares annually, out of which 493,059 hectares are covered with different vegetable crops. The Kharif vegetables cover

2, 19,882 hectares and Rabi summer vegetables account for about 2,73,177 hectares. The estimated annual production of vegetables is estimated at 34.24 lakh tonnes. District-wise area sown annually, area under Kharif-Rabi vegetables, estimated production and yield per hectare are shown in the Appendix VIII.

Moderately high yields of vegetables are obtained in the district of Balashwar, Cuttack, Dhenkanal, Mayurbhanj and Puri. Yield rate per hectare in the districts of Balangir, Kalahandi, Kendujhar, Koraput and Phulabani are rather low. In the districts of Ganjam, Sambalpur and Sundargarh the yield rate is around the state average. With additional irrigation sources, the area under vegetables is showing an increase during recent years. Similarly by use of good seeds and appropriate technology, the rate of yield and quality has indicated an upward trend. Definite concentration with particular vegetable crop or crops have developed in many parts of the state as a result of systematic efforts and due to specific market demand. Vegetables having marketability and high value are now getting preference keeping quality over others and occupying larger areas. This has opened up new avenues for increased production of specific vegetables in which mention may be made about Potola, tomato, beans and onion.

The districts of Koraput and Phulabani have hilly zones, where during the rainy season, the low temperature permits cultivation of tomato, cauliflower, peas and beans and such other temperate vegetables. Monsoon potato has become a normal feature in these hilly districts. Good size compact heads of cauliflower are now available as early as third week of July in Koraput. It is expected that with more adaptable varieties evolved for such off season vegetables, and better technique of culture, area under such temperate vegetables is likely to go on increasing in these two districts and may extend to other districts having comparable climatic situations.

The Department of Food & Agriculture is engaged in a scientific seed multiplication programme wherein quality seeds are produced for distribution to farmers. There are six Breeder Seed Farms located at Kuanr (Kendujhar district), Sukinda (Cuttack district), Lobarsing (Ganjam district), Kothgarh and Boudh (Phulabani district) and Semiliguda (Koraput district).

For seed distribution, up to the end of fifth plan, there were Kitchen Gardening Sale Centres in four districts only. During sixth plan, this scheme has been extended to cover all the thirteen districts. Under the scheme, vegetable seeds, fertilisers and pesticides are made available in small packets to vegetable growers on no profit and no loss basis.

Mushroom as a nutritive source of food has also been recognised for its delicacy with our diet. For encouraging its production at the farmers level mushroom spawn production was taken up initially at Bhubaneshwar and distributed to farmers. In view of the popularity of the programme it has been proposed to extend this scheme to Semiliguda, Sambalpur, Rourkela, Phulabani and Baleshwar during the Sixth Plan period.

With increased production of potato and such vegetables which have good keeping quality and higher market value, cold storages have been established in public, co-operative and private sectors.

Agricultural Implements

Improvised implements are always less labour intensive and economic in their use. To suit the economy of an average farmer suitable implements have been developed as agroclimatic conditions of different states under different conditions. Rationalisation of all implements is not possible or advisable, since it will not work to the prevailing conditions. In Orissa the implements are mostly bullock drawn or manually operated and developed keeping in view the requirement and financial condition of an average farmer. The following implements listed below have been developed, and are being manufactured at the implement factory, Bhubaneshwar.

Mould Board Plough

A primary tillage equipment, made of mild steel except the beam which is made of wood. Weight only 6.5 kg. Cuts a rectangular furrow slice of 10 cm. wide and 7 cm. to 15 cm. deep. Inverts the soil. Covers weed and other vegetation and insects. Covers 0.5 acre to 0.75 acre per day (8 working hours) and lasts for 5 to 7 years. Share point is the only part which wears out. This can be easily operated by a pair of medium size bullocks. The coverage is four times better than that of a country plough and is economical from operational cost point of view.

Disc Harrow

A secondary tillage equipment made out of 4 high carbon steel discs of 150 mm. dia in two gangs. Weight only 31 kg. Cuts soil into slices before first ploughing and thus facilitates subsequent ploughing. Used for clod breaking, pulverising the land on dry condition and puddling in wet condition. Covers 2 acres per day (8 working hours). This can easily be operated by a pair of bullocks ploughing once or twice followed by double discing is adequate.

Three Tyre Cultivator

A secondary tillage equipment made out of mild steel except the beam made out of wood. Weight only 16 kg. Used for clod breaking and sowing of seeds in 3 rows by changing the position of extreme tyres as per the need and attaching a seed box to it. It is used for intercultural operations, covers 1 to 1.25 acres per day (8 working hours) and can be easily operated by a pair of medium sized bullocks, one man for secondary tillage with a pair of bullocks and two men for sowing.

Three-row Seed Drill (Manually Operated)

A semi-automatic sowing equipment made of mild steel except handle which is made of wood. Weight only 12 kg. Covers 1 acre per 6 hours of work and can be operated by one man only. Lasts for 5 years. It sows seeds like paddy, wheat, etc. in 6" row spacing in a particular depth and performs better in good pulverised and prepared bed.

Rake Weeder

A finger type steel weeder. Simple in its form. Used for weeding small weeds in row crops. Operated by one man. Covers 1 acre in 6 to 7 hours. Weight along with wooden beam 1.4 kg.

Blade Weeder

Blade-cum-rake type weeder is provided with a roller for easy operation. It is used for efficient weeding in row crops. Operated by one man and covers one acre in 5 to 6 days. Weight along with beam 3.5 kg.

Trench Hoe

A simple garden implement. One side is used as Phauda and other side as pick axe. It is made of mild steel except the handle which is made of wood. Works satisfactorily in both dry and wet conditions. Can be operated by one man only. Weight along with beam is 1.6 kg.

Plane Hoe

Hoeing, pulverising and row making can be made conveniently by this implement. It is made of mild steel except the long handle of wood. It can be operated by one man only. Weight along with handle is 1.5 kg.

Gujarat Hand Hoe

Furrows and earthing is done conveniently. It is made of mild steel except the long handle made of wood. Weight alongwith handle is 1.4 kg.

Wheel Hoe

Hoeing is done conveniently. Easy to operate due to placing of wheel at the front made of mild steel except the handle made of wood. Easily operated by one man only. Weight with handle is 6.75 kg.

Garden Rake

Simple and handy tools for sorting out weeds, stones from a ploughed field used for breaking clods, cleaning straw from the threshing floor. Also used for inter-cultural operation in Ragi field. Made of mild steel except the handle made of wood. Weight alongwith handle is 1.6 kg.

Storage Bins

Essential to store grains safely from rats and insect attack. Seeds are prevented from moisture contamination and excessive heat to increase the percentage of germination. Made of galvanised plane sheets and thereby rust proof. Small and large sized storage bins are available with capacity of 260 kg. paddy and 500 kg. paddy respectively. Weight only 20 kg. and 36 kg. respectively.

Low Lift Hand Pump

Manually driven, reciprocating type, continuous flow type. 10,000 litres (610 kerosene tins) water is lifted from 12' depth. Discharge is double than that of Tenda. Irrigates 1/2 acre in 8 hours. Made of steel except the leather washer and operated by two persons. It weighs 45 kg.

Chain Washer Pump

Simple and efficient low lift pump, 4,000 gallons of water is lifted from 8' to 10' depth in an hour. Discharge is 4 times than that of Tenda. Suitable for wells having water at 15' depth. Irrigates 2 to 3 acres of land safely. Flow of water is continuous. Made of steel except rubber washers. Bearings are provided for efficient operation. Handled by two persons only.

Bullock Operated Pump

Work on same principle as hand operated chain washer pump. 4,000 to 5,000 gallons of water is lifted from 10' to 12' depth in an hour. Suitable for wells having water at 25' depth. Irrigates 4 to 5 acres of land safely. Flow of water is continuous. Made of steel except the rubber washers. Operated by a pair of medium sized bullocks and one man.

Farm Mechanisation

The small size of holding and fragmented land seldom permit the farmers to operate mechanised farming. The animal draught power is the main source of operating the farm implements. However, for major land shaping, land reclamation and leveling the use of tractor is necessary. Therefore, the Agro Industries Corporation, the Engineering Wing of Agriculture Directorate and some private enterprises have tractor operated implements to perform the same.

Seed and Manure

Commercial distribution on the sale of certified seeds to farmers are being organised for the first time under the national seed programme. A State Seed Corporation is in operation. A seed certification agency is working in the state for production of certified seeds. Besides these, private dealers also deal with improved high yielding varieties of different seeds. In the 13 revenue districts the departmental arrangement has been made to supply the high yielding seeds by the Assistant Director of Agriculture (Input) who supplies the same through A. E. Os. and V. A. Ws. to the farmers. For cultivation of different crops organic manure and chemical fertilisers are now in use for crop production. The State Bio-chemist is looking after the extension programme on preparation of compost and farm yard manure. As regards chemical fertilisers, varieties of chemical fertilisers are available in the market through co-operative and private dealers. The distribution is monitored by the Deputy Director of Agriculture (Fertiliser) in the Directorate of Agriculture.

4. IRRIGATION

In Orissa, agricultural production could not be established so far only because a major portion of the cultivated area is taken care of by monsoon, which very often behave erratically. Out of the 60,97,000 hectares of net sown area, only 11,48,000 hectares received irrigation during 1978-79 including minor and lift irrigation

which accounts for only 18.82 per cent of the net sown area. In 1982-83 the irrigated area was 18,45,000 hectares which accounted for 30.26 per cent of the net sown area.

Of the five major irrigation projects in Orissa, the Salandi Project is able to irrigate 37,000 hectares in Baleshwar district. The other four major irrigation projects namely Mahanadi Delta Project (4.72 lakh hectares), Hirakud Project (2.54 lakh hectares), Rushikulya system (55 thousand hectares) and Baitarani system (35 thousand hectares) provide irrigation facilities to Cuttack, Puri, Sambalpur, Balangir, Ganjam and Baleshwar districts. No other district has the facility of irrigation from any major project, therefore several medium projects and large number of minor projects have been set up in these districts. Of the medium projects Budhi Budhiani, and Salia Projects in Puri district, Dhanei, Bahuda and Hiradharbati in Ganjam district, Salki Project in Phulabani district; Derjang in Dhenkanal district, and Haldia in Mayurbhanj district deserve mention. Besides these, irrigation from other sources are available from arresting water through cross-bunds, lift irrigation points, dugwells and other private sources like ponds, tanks, etc. Source-wise irrigated area in Orissa for the year 1978-79 is given in Appendix III (figures within brackets relate to the year 1982-83). In Appendix IV information on crop-wise irrigated area for the year 1978-79 has been provided.

Orissa is rich in water resources. It has water potential to irrigate about 75 per cent of the cultivated lands. Till the end of the sixth plan only 28.3 per cent of the cultivable lands could be irrigated. At the end of the sixth plan the total irrigation potential (flow) would be of the order of 17.37 lakh hectares including the additional potential of 4.47 lakh hectares created during this plan. As a result agricultural development in the state has lagged behind the national average. Before independence only two important irrigation schemes, namely the Orissa Canal system and the Rushikulya Canal were in existence. Irrigation potential accruing from these and a few other small pre-plan schemes was of the order of 1.48 lakh hectares only.

By the end of Fourth Plan, total plan investment on major and medium irrigation was only Rs. 142.83 crores and cumulative irrigation potential of 5.97 lakh hectares in Kharif and 1.95 lakh hectares in Rabi (annual 7.92 lakh hectares) was created which was about 10 per cent of the total area under cultivation in the state (approximately 61.37 lakh hectares).

During the Fifth Plan (1974—78) priority was accorded to major and medium irrigation. Investment in this sector was Rs. 70.63 crores during these four years. During the plan, additional potential of

0.93 lakh hectares in Kharif and 0.92 lakh hectares in Rabi (annual 1.85 hectares) was created. Thus, by the end of Fifth Plan cumulative potential of 6.90 lakh hectares in Kharif and 2.87 lakh hectares in Rabi (annual 9.77 lakh hectares) was created which was about 11 per cent of the total area under cultivation in the state.

During the years 1978—80, priority to irrigation sector was maintained and investment was Rs. 70.00 crores. Apart from the spill over schemes the Fifth Plan execution of four new major schemes namely, Mahanadi-Birupa Barrage, Upper Indravati, Indra and Chiroli; ten new medium schemes and one new modernisation scheme were taken up. Altogether 10 major, 31 medium and 3 modernisation schemes have been under execution during these two years. Additional potential of the order of 0.45 lakh hectares in Kharif and 3.43 lakh hectares in Rabi (annual 10.78 lakh hectares) which constituted about 12 per cent of the total area under cultivation, was proposed to be created. The work on the major projects like Mahanadi Delta, Salandi, Anandapur, Upper Kolab, Rengali Dam, Rengali Irrigation, Mahanadi-Birupa Barrage, Upper Indravati are in progress. Besides these, the work on the 10 medium projects namely Ang, Dahuka, Sundar, Saipala, Kalo, Dadarghati, Khadkei, Ramanandi, Nesa, Aunli, Upper Suktel, Baghua-Stage II, and Bonda-Pipili are also in progress.

The three spillover modernisation schemes are modernisation of Rushikulya system (pre-plan project), extension and improvement of Hirakud project and modernisation of Balidaha system (a pre-plan project).

The Mahanadi, the largest river in the state has been the cause of many devastating floods in the past. To certain extent, its flood has been regulated by the Hirakud dam. But the flood from 48,563 square kilometres of free catchment below the Hirakud dam still poses a serious threat down stream. The present embankment system along the banks of the river is capable to tolerate floods of about 24,06,500 cusecs safely. On the otherhand it is required to tolerate a flood of the dimension of 31,14,400 cusecs. This required strengthening of the embankment system. A flood control reservoir across the river Brahmani is also under construction.

In the deltaic region of the state the water logged areas have increased and the land which were at one time rich paddy fields are now submerged in a depth of one or two metres of water. Besides, in the district of Baleshwar, Mayurbhanj and Puri considerable improvement can be done to non-irrigated land by the removal of drainage congestion. The deltaic area needs immediate attention in this regard.

There are many areas in the state where the scope for major irrigation projects is rather limited. Such areas are mostly in inland districts of the state. Since investment on individual minor irrigation project is not heavy and the gestation period is small, reasonable investments have been made on such projects.

The minor irrigation (flow) potential in Orissa has been estimated to be about 10 lakh hectares (Kharif). By the end of 1979-80 about 3.3 lakh hectares of flow potential was created. Considering the large potential still to be exploited, the programme need to be stepped up particularly in chronically drought prone areas.

A large number of tanks serving the dual purpose of irrigation and pisciculture are managed and controlled by the Grama Panchayats. A number of small irrigation projects have been executed by the Panchayat Samitis. Irrigation projects of the Revenue Department with ayacut of less than 60 acres (24 hectares) are also managed and controlled by the Panchayat Samitis. At present there are about 6,276 flow projects belonging to the Panchayat Samitis, and 4,250 tanks belonging to the Grama Panchayats. Most of these irrigation sources require renovation.

The state has good ground water potential. Preliminary survey indicated that about 10,000 public tube-wells, 28,000 filter point tube-wells and 5.6 lakh standard open wells can be successfully installed to extend irrigation facilities to 17 lakh hectares during Kharif and 11 lakh hectares during Rabi. Similarly, perennial rivers in the state carry about 9.5 million hectare metres of water to the sea every year. By utilising a mere 5 per cent of this quantity through lift it is possible to provide assured irrigation facilities to nearly 9.5 lakh hectares of land. Such lift points can be located along the banks of different rivers for irrigating the adjacent areas.

The extensive net work of rivers, streams and drainage ways of the state annually discharges about 1,00,000 m.³ into Bay of Bengal. In addition, the annual flow of ground water into the sea is estimated at some 33,000 m.m. Theoretically these water resources could irrigate some 15 Mha. But actual potential for irrigation is estimated at 7.40 million hectares from all sources. However, the potential for utilisation of these resources is limited by a number of factors.

In general, neither major nor medium irrigation projects have yielded benefits to the full extent of their potential. Reasons for this poor performance are:—

(a) Water losses in the conveyance system and on fields are grossly under estimated at the design stage, resulting in the area actually irrigated being considerably smaller than the area commanded by the distribution system.

(b) Incomplete water conveyance system and inadequate drainage at the farm level.

Water at present is supplied through outlets serving 40 ha. blocks and the farmers are expected to construct filed channels and drains within these blocks. There is no effective organisation at the village level to mobilise the farmers in taking up these nor in helping the farmer with design, implementation and financing of these works. Consequently, virtually no field channel and drains have been constructed. This has resulted in ineffective water use, shortages in some parts of the blocks and water logging in others.

For the major projects Command Area Development organisations have been established for implementation of on-farm work below the outlet that serve 40 ha. blocks. Some outlets have commands even extending over 100 hectares. The Command Area Development (C.A.D.) programme will take up construction of on-farm works in a consolidated area of about 57,000 hectares in three of Orissa's major irrigation systems—Hirakud, Salandi and Mahanadi Delta (Stage-I and Stage-II). The main objective of the programme would be to optimise the productive use of available water resources. This is sought to be achieved through land consolidation and provision of irrigation and drainage facilities at the farm level together with associated control structures, lining of critical sections of the water course sections and proper land development. Water distribution to each farm would be ensured with necessary drainage to eliminate water logging in low lying areas. Results from pilot operations in Orissa, covering a total of about 7179 hectares in various command areas indicate that the likely benefits would be a 20 per cent to 30 per cent increase in crop yields and water servings that would permit a 20 per cent to 30 per cent increase in the irrigated area.

Land fragmentation in Orissa has been a constraint to intensified agriculture. For this reason, "Orissa Consolidation of Holding and Prevention of Fragmentation Act", which enables the re-arrangement and re-distribution of land in compact rectangular blocks has been introduced. In the course of land consolidation

land titles are cleared and land is set apart for community purposes such as filed channels and drains. Under the C. A. D. programmes the alignment of filed channels and drains would be co-ordinated with the layout of the "Chakas" (consolidated plots) so that each holding would be ensured direct and independent access to an irrigation and drainage channel and roads. Since the start of the land consolidation programme in 1974, about 46,000 hectares have been consolidated up to the end of the 5th plan period. During 6th plan period consolidation has been completed in 3,49,231 hectares bringing the total progressive achievement to 3.95 lakh hectares relating to 3210 villages. During the 7th plan period a target of 1,30,000 hectares has been fixed.

As already explained the consolidation is a rather time consuming process and systematic implementation of on-farm development in consolidated areas may take considerable time to have impact on agricultural production. It is therefore necessary to make some alternate arrangements which will ensure water control to a reasonable extent in these major commands. One feasible programme may be to close some distributaries or minors or subminors during the post-monsoon period after giving some light irrigation so that the medium to light duty crops can be grown and larger area can be covered with such crops. The present tendency is to grow second crop of paddy during Rabi in Summer season and this makes control of water difficult and a lot of water is wasted due to field to field irrigation. Besides, the productivity of paddy is likely to go down if two paddy crops are taken up successively year after year.

Results from the agro-economic survey indicate that the discrepancies between "head-reach" and "tail end" farms are less in the Mahanadi and the Salandi command areas than in the Hirakud system. This may be due to more unlevelled lands in the latter. Consequently the benefits of on-farm development would be more for farmers in Hirakud than in Mahanadi and Salandi areas. Further more, since the "tail-end" farmers would then be assured of more timely supply and no longer suffer from water logging, their irrigated areas and yields would rise more substantially than these of "head-reach" farmers.

In the coastal areas (Mahanadi and Salandi) with a flat topography and level land, paddy is grown exclusively in the Kharif. The average yield is low (about 1.6 tonnes per ha.) due to uncertain water supply and lack of water control. With improved extension services leading to adoption of better cultural practices (more timely planting, weeding, higher plant population, etc.) paddy yield is on the

increase. Better water control as a result of filed channel and drains from the turn out to each farm would facilitate spread in the use of high yielding variety. Improved water control and cultural practices would also lead to increase in the area sown with Rabi paddy. The present level of 2.2 tonnes/ha. can go up to 3.3 tonnes/ha. Some pulses and oilseeds (mostly groundnut) would also be grown in the Rabi with yields increasing slightly. The present cropping intensity will go progressively higher with a better water delivery system.

The above programmes are mostly being operated on demonstration basis but large scale development on the above lines is yet to take place to pave the way for increased agricultural production. While on-farm development is attempted under C. A. D. programme, it is also relevant to improve the canal systems in the major commands to prevent wastage of water and water supply to the tail-ends. Repair of canals, minors and sub-minors, provision of control structures to regulate flow of water at different reaches and improving the drainage system particularly in Mahanadi Delta would help in improving agricultural production. While 1 cusec of water is now irrigating about 25 acres (10 hectares) of summer paddy it may be possible to increase the coverage to 40 acres (16 hectares) with proper control and prevention of losses in conveyance, etc. While a lot of water is going waste due to uncontrolled distribution, the agricultural production is not registering a rise either due to excess water or scarcity of water at critical period.

While the major irrigation projects are located in the valley of the few larger rivers, the medium irrigation projects (2000—12000 ha.) are constructed along the numerous smaller rivers throughout the state. Consequently they provide an opportunity to spread the direct and indirect benefits more evenly and to achieve a broader development impact. There is immense possibility for agricultural development in backward and drought prone areas through medium irrigation projects. For the same reason in the past M.I.Ps. have been given high priority in the state's irrigation development. The M.I.Ps. have shorter gestation period and provide a faster realisation of irrigation benefits.

The irrigation projects taken in hand would both extend the area under irrigation and increase the productivity and crop intensity, incidentally providing additional year the round employment opportunities to landless labourers and small farmers.

Along with major irrigation projects there was continued development for a larger number of minor diversion weirs and reservoir schemes, which have been constructed during last 35 years. Such areas are mostly in the inland districts. The minor irrigation (flow) potential has been estimated to be about 10 lakh hectares (Kharif). By the end of 1979-80 about 3.33 lakh hectares of potential was created.

The main problem with the M.I.Ps. is the shutter design which appear somewhat defective. Due to leakage in the shutters the stored water drains out soon after the monsoon. There should be some improvement in the design and operation of the canal head works and cross regulators. Many of the projects have become derelict for various reasons.

The viability of the minor irrigation projects depends on two factors-(a) a cropping pattern design for optimum production per cusec of water and (b) an efficient distribution system.

The cropping pattern proposed is for full coverage of high yielding varieties of paddy in Kharif season and 25.50 per cent of mixed patch of paddy, wheat, groundnut and pulses for the Rabi season. The achievement of this radical change in cropping system will require not only a concentrated extension effort, but strict regulation of water releases to support the patterns proposed.

The irrigation projects generally have not yielded expected benefits, mainly due to lack of proper distribution system in the outlet command and inadequate supporting services. These need to be ensured.

There are in all 4016 L. I. Projects energised of which 457 are defunct owing to unavoidable reasons. The rest 3559 points comprising 1996 tube-wells and 1563 river lifts have a CCA of 62,810 ha. with a Rabi potential of 45,945 ha. But on account of various constraints even this potential is not being fully utilised. The main reason are as follows:-

- (a) Higher water rates as compared to flow rate
- (b) Insistence on advance payment of water rate
- (c) Stipulation of agreement for 15 acres (6 hectares) contract during Kharif and 5 acres (2 hectares) during Rabi for the operation of the L. I. point.

(d) Some of the farmers who get benefit do not pay the water charges in time and thus run into arrears. Because of such defaulters other farmers in the ayacut do not get irrigation in time.

(e) The farmers on the head-reach do not allow water to go to middle or tail and thereby reducing the coverage.

It is urgent that these field problems are sorted out early to overcome the present level of under utilization of this sources and the potential of 1,57,350 hectares in Kharif and 94,140 hectares in Rabi sought to be created in the Sixth Plan through 4600 projects.

Besides these public tube-wells, 1390 shallow tube-wells have been so far completed in the private sector with an estimated command of 2780 hectares at 2 hectares per tube-well in Rabi. Another 3000 is expected to be completed soon creating a further potential of 6000 hectares in Rabi.

There are about 2,67,164 dugwells completed in the private sector of which 9,652 are energised. The estimated irrigated area works out to 1,12,657 hectares at 0.40 hectare per manually operated dugwell and 1 hectare per energised well in Rabi. During the Sixth Plan, there was a programme to install 4 lakh standard dugwells.

In difficult soil profile, construction of dugwells needs more technical support as beneficiaries sometimes sustain loss in the event of failure of well either due to lack of adequate water supply or inability to tackle the special profile. In flat topography of coastal districts, there is good feasibility of dugwells in periphery of drainage basins, but in tribal and western districts with hilly topography the dugwell scheme designed to benefit the small and marginal farmers and tribal poor has been a failure.

Cropped Area

The estimates of net area sown and gross cropped area in Orissa for the period 1970-71 to 1978-79 are given in Appendix-V (A). It may be seen that the net area sown during these years has varied between 5,601,000 to 6,137,000 hectares. This variation is mainly due to rainfall pattern during the early monsoon season. The gross cropped area has been increasingly progressing. During the year 1970-71 the gross cropped area was estimated at 6,761,000 hectares which has increased to 8,275,000 hectares during 1978-79. The intensity of cropping, therefore, has increased from 121 per cent in 1970-71 to 136 per cent in 1978-79.

Cultivation of a second crop after the main Kharif crop has been on the increase [Appendix-V (B)]. During the year 1973-74 the area under Rabi crop was of the order of 14,97,000 hectares which has increased to 24,04,000 hectares in 1978-79. Similarly there has been an upward trend in the cultivation of annual crops like sugarcane and fruit plants. The area under such crops has increased from 1,57,000 during 1973-74 to 1,96,000 during 1978-79.

The estimates of area and production of different crops during 1978-79 are given in Appendix-V (C). The physical targets and achievements of agricultural production in Orissa from the first plan till 1980-81 are given in Appendix-V(D).

5. STATE ASSISTANCE TO AGRICULTURE AND CONNECTED SUBJECTS

Activities of Agriculture Department and other Agencies

The field problem of farmers are being solved by conducting research, both fundamental and applied. In the professional institutes namely the Orissa University of Agriculture and Technology, Bhubaneswar and the Central Rice Research Institute, Cuttack, fundamental research is being conducted. The findings from these research institutes are tested in the four Regional Research Stations located at Semiliguda, Bhubaneswar, Kendujhar and Chipilima in the four agroclimatic regions of the state. On the basis of results obtained in the Regional Research Stations further studies and verification trials are undertaken in the 13 Adaptive Research Stations in each district of the state. The adaptive trials are being conducted under the guidance of the University and Agriculture Departmental officers in the form of multi-locational tests. The results and recommendations of such trials are reviewed at the state level and the approved package of practices and varieties of crop plants are passed on to the extension agency for dissemination to the farmers.

The technical programme for all such trials are prepared by a committee consisting of the experts of the O. U. A. T., the senior technical officers of the Agriculture Department and the Regional Directors of the Research Stations.

The Central Rice Research Institute located at Cuttack is engaged in specific studies on rice in saline areas, endemic areas with pests and diseases as well as drought and flood affected areas of the state. The Central Rice Research Institute also executes the operational research projects in which the institute experts are directly involved in carrying the results of research on rice to the farmer's field. In

this innovative programme the senior extension officers of the Directorate of Agriculture work in collaboration with the experts of the Central Rice Research Institute.

As has been indicated earlier agricultural activities have been classified into three major classes. (I) Agricultural Education (II) Agricultural Research and (III) Agricultural Extension. The Institutions involved in Agricultural Education are:—

(1) Orissa University of Agriculture & Technology

- (a) Utkal Krushi Mahavidyalaya, Bhubaneshwar
- (b) Orissa College of Agriculture Engineering, Bhubaneshwar
- (c) Orissa College of Veterinary Science & Animal Husbandry, Bhubaneshwar.

(2) Pre-Service Training

- (a) Grama Sevak Talim Kendra ... Bhubaneshwar
- (b) Grama Sevak Talim Kendra ... Balangir
- (c) Grama Sevak Talim Kendra ... Rangeilunda
- (d) Grama Sevak Talim Kendra ... Mahisapat
- (e) Gardeners Training Centre ... Puri
- (f) Gardeners Training Centre ... Anugul

(3) In-Service Training

- (a) Soil Conservation Training Institute, Koraput
- (b) Plant Protection Training Institute, Bhubaneshwar
- (c) Refreshers Training Centre, Bhubaneshwar
- (d) Minor Irrigation and Water Use Training Centre, Bhubaneshwar

Farmers Training

- (a) Bhawanipatna
- (b) G. Udayagiri

Special Research Stations are involved on the research activities on different crops by the State Department of Agriculture, Orissa University of Agriculture and Technology, and Indian Council of Agricultural Research. The following Research Stations are functioning in the state.

Departmental	Headquarters
Research on Soil and Manure ..	Bhubaneswar
Research on Crop Pest ..	Bhubaneswar
Research on Crop Disease ..	Bhubaneswar
Research on Agricultural Implements ..	Bhubaneswar
Horticulture Research Station ..	Bhubaneswar
Pulse Research Station ..	1. Nayagarh .. 2. Semiliguda
Coconut and Areca-nut Research Station ..	Sakhigopal
Citrus Research Station ..	R. Udayagiri
Agricultural Research Station ..	Sambalpur
Tapioca Research Station ..	Cuttack
Soyabin Research Station ..	Semiliguda
Adoptive Research Station (Farm)	
Cuttack ..	Barchana
Puri ..	Sakhigopal
Baleshwar ..	Balia
Ganjam ..	Golanthara
Mayurbhanj ..	Samakhunta
Kendujhar ..	Kendujhar Farm
Dhenkanal ..	Mahisapat
Balangir ..	R. E. Farm
Sambalpur ..	Chakuli
Sundargarh ..	Sundargarh Farm
Phulabani ..	Phulabani Farm
Kalahandi ..	Arkabali
Koraput ..	Semiliguda

Orissa University of Agriculture and Technology :—

Brahmapur Research Station	.. Brahmapur
Jaypur Research Station	.. Jaypur
Potangi Research Station	.. Potangi
Jute Research Station	.. Kendraparha
Bhubaneshwar Research Station	.. Bhubaneshwar
Chipilima Research Station	.. Chipilima
Saline Research Station	.. Keshapur

Central Government

Central Rice Research Station, Cuttack

The extension programme is conducted by three Directorates i. e., the Directorate of Agriculture and Food Production, Directorate of Horticulture, and the Directorate of Soil Conservation. The Directorate of Agriculture is involved in monitoring the food, fibre, oil-seeds, plant protection, seed production in departmental farms, insecticides and pesticides, quality control of fertiliser, training and information services, and overall guidance of agricultural development. On re-organisation of Agricultural set up through Orissa Agricultural Development Projects, a single line of administration has been made from the grass root level to the high ups in the state. The V. L. Ws. in the village level with the 5911 V. L. W. circles, the A. E. Os. in the 778 A. E. O. circles are conducting the training and visit programme under 30 District Agricultural Officers, and district level subject matter specialists. In the Range level the 10 Deputy Directors of Agriculture are being assisted by the Range level subject matter specialists, for the overall development in the ranges. The Directorate of Horticulture is looking after the fruit, vegetables, and plantation crops including seeds, planting materials, fruit preservation and extension of area under horticultural crops. For this purpose the Horticulturists and Project Officers are working in different ranges in collaboration with the Deputy Directors of Agriculture (Ranges). The Directorate of Soil Conservation is looking after the soil survey, watershed programme, soil conservation through terracing, contour bunding and preparing a vegetative canopy to reduce soil erosion. For this purpose the cashew-nut, casurina, coffee, eucalyptus and some fodder plantations are in progress.

APPENDIX I

DISTRIBUTION OF SOIL IN DIFFERENT DISTRICTS (IN HECTARES)

Sl. No.	Name of the district	Red soil	Laterite	Alluvial
(1)	(2)	(3)	(4)	(5)
1	Koraput ..	52,05,336.7	2,62,744.0	..
2	Ganjam ..	20,60,152.6	4,22,188.8	..
3	Puri ..	17,06,464.8	1,83,700.8	..
4	Cuttack ..	16,72,860.2	70,144.0	7,57,759.8
5	Baleshwar ..	4,47,441.8	2,62,140.0	6,65,660.0
6	Mayurbhanj ..	..	2,62,140.0	..
7	Kendujhar ..	3,40,787.2	..	..
8	Dhenkanal ..	9,45,535.2	..	..
9	Sambalpur ..	11,44,179.6	..	..
10	Sundargarh ..	11,74,790.4	2,86,255.6	..
11	Balangir ..	10,44,147.2	..	..
12	Phulabani ..	6,69,699.2	..	..
13	Kalahandi ..	8,97,361.0	..	..
Orissa ..		173,08,755.9	17,49,313.2	14,23,319.8

APPENDIX I—*contd.*

DISTRIBUTION OF SOIL IN DIFFERENT DISTRICTS (IN HECTARES)

Sl. No.	Name of the district	Coastal alluvial	Brown forest	Black soil
(1)	(2)	(6)	(7)	(8)
1	Koraput ..	..	78,943.2	10,20,347.2
2	Ganjam ..	1,27,286.4	4,857.6	2,94,514.6
3	Puri ..	5,67,776.8	..	1,04,856.6
4	Cuttack ..	1,67,286.0	..	..
5	Balেশwar ..	..	..	..
6	Mayurbhanj ..	..	..	..
7	Kendujhar ..	..	..	..
8	Dhenkanal —	..	..	54,928.8
9	Sambalpur ..	..	..	..
10	Sundargarh ..	..	..	..
11	Balangir ..	..	..	1,32,072.0
12	Phulabani ..	..	2,62,144.4	3,93,006.6
13	Kalahandi ..	..	..	3,95,158.2
	Orissa ..	8,62,349.2	3,45,945.2	23,94,884.0

APPENDIX - I—contd,**DISTRIBUTION OF SOIL IN DIFFERENT DISTRICTS (IN HECTARES)**

Sl. No.	Name of the district	Mixed Red and Black		Red and yellow	Total
(1)	(2)	(9)		(10)	(11)
1	Koraput	..	..	52,528.0	66,19,899.1
2	Ganjam	..	..	..	29,09,000.0
3	Puri	..	..	..	26,62,799.0
4	Cuttack	..	..	..	26,68,050.0
5	Baleshwar	..	..	2,10,008.2	15,55,150.0
6	Mayurbhanj	..	..	22,85,860.0	25,48,000.0
7	Kendujhar	..	..	16,95,162.8	20,35,950.0
8	Dhenkanal	..	..	16,73,936.0	26,74,400.0
9	Sambalpur	..	1,57,286.4	29,83,584.0	42,85,050.0
10	Sundargarh	..	..	10,17,504.0	24,78,550.0
11	Balangir	..	2,37,342.0	7,49,788.8	21,63,350.0
12	Phulabani	..	..	13,79,649.8	27,04,500.0
13	Kalahandi	..	..	15,44,580.8	28,37,100.0
Orissa		..	3,94,628.4	1,35,92,602.4	38,071,798.1

APPENDIX II

LAND UTILISATION PATTERN IN ORISSA DURING 1982-83

(Area in 000' hectares)

Name of the district	Geographical area	Forests*	Misc. tree crops not included in net area sown	Permanent pasture and other grazing lands
(1)	(2)	(3)	(4)	(5)
Baleshwar ..	647	40	28	26
Balangir ..	883	213	20	40
Cuttack ..	1,089	140	31	38
Dhenkanal ..	1,092	454	41	45
Ganjam ..	1,220	569	31	38
Kalahandi ..	1,158	527	1	41
Kendujhar ..	831	407	3	38
Koraput ..	2,702	1,400	97	94
Mayurbhanj ..	1,040	468	10	29
Phulabani ..	1,104	829	6	4
Puri ..	1,046	343	29	57
Sambalpur ..	1,749	701	102	70
Sundargarh ..	979	549	10	39
Orissa ..	15,540	6,640	409	559

*The total forest area as on 1st April 1982 given by the Chief Conservator of Forests is 5996 thousand hectares.

APPENDIX II—Contd.

(Area in 000' hectares)

Name of the district	Culturable wastes	Land put to non-agricultural uses	Barren and unculturable land	Current fallows
(1)	(6)	(7)	(8)	(9)
Baleshwar ..	20	50	24	17
Balangir ..	47	39	30	56
Cuttack ..	10	118	10	118
Dhenkanal ..	7	46	15	60
Ganjam ..	5	64	5	30
Kalahandi ..	5	2	3	4
Kendujhar ..	6	21	18	25
Koraput ..	30	110	45	120
Mayurbhanj ..	6	30	35	22
Phulabani ..	5	16	2	6
Puri ..	32	62	21	33
Sambalpur ..	63	64	47	77
Sundargarh ..	9	28	10	17
Orissa ..	245	650	265	585

APPENDIX II—Concl'd.

(Area in 000' hectares)

Name of the district	Other fallows	Net area sown		
		Irrigated	Unirrigated	Total
(1)	(10)	(11)	(12)	(13)
Baleshwar ..	10	143	289	432
Balangir ..	41	115	282	397
Cuttack ..	20	364	240	604
Dhenkanal ..	21	70	333	403
Ganjam ..	5	269	204	473
Kalahandi ..	5	54	516	570
Kendujhar ..	10	33	270	303
Koraput ..	20	73	713	786
Mayurbhanj ..	10	65	365	430
Phulabani ..	5	43	188	231
Puri ..	10	332	127	459
Sambalpur ..	20	247	358	605
Sundargarh ..	20	37	260	297
Orissa ..	197	1,845	4,145	5,990

Source—Orissa Agricultural Statistics, 1982-83

APPENDIX III

SOURCE-WISE IRRIGATED AREA IN ORISSA FOR THE YEAR 1978-79

(Figures within brackets relate to the year (1982-83))

(Figures in hectares)

Name of the district (1)	Major and Medium		Minor (Flow)	
	Kharif (2)	Rabi (3)	Kharif (4)	Rabi (5)
Baleshwar ..	59,570 (82240)	19,730 (18180)	4,932 (5270)	2,470 (1897)
Balangir ..	42,790 (49790)	21,710 (21650)	10,772 (14443)	1,426 (1011)
Cuttack ..	2,10,920 (196720)	1,17,550 (106080)	12,553 (13573)	3,442 (—)
Dhenkanal ..	6,470 (16490)	3,240 (6460)	28,539 (25199)	4,495 (—)
Ganjam ..	94,380 (95720)	3,060 (3390)	90,363 (102860)	10,027 (—)
Kalahandi ..	11,110 (12510)	3,340 (4030)	16,214 (17708)	2,774 (3271)
Kondujhar ..	10 (9740)	3,000 (—)	8,494 (11551)	1,851 (687)
Koraput ..	2,820 (17320)	2,250 (6690)	20,565 (16283)	3,136 (1697)
Mayurbhanj ..	8,030 (19290)	1,400 (6700)	29,070 (22676)	2,326 (—)
Phulabani ..	19,870 (21870)	2,020 (2220)	10,150 (11767)	1,662 (613)
Puri ..	1,33,040 (165980)	81,620 (102620)	22,898 (21345)	2,595 (2385)
Sambalpur ..	1,12,960 (122630)	77,710 (79030)	17,555 (23635)	1,964 (1257)
Sundargarh ..	2,610 (7640)	1,620 (1840)	15,933 (13660)	2,817 (952)
Orissa ..	7,04,580 (817940)	3,38,250 (358890)	2,88,038 (299970)	40,985 (13770)

APPENDIX III—Contd.

(Figures in hectares)

Name of the district	Minor (Lift)		C. D. and other private sources (including dug wells)	
	Kharif	Rabi	Kharif	Rabi
(1)	(6)	(7)	(8)	(9)
Baleshwar ..	200 (14100)	2,546 (15469)	4,387 (4587)	706 (906)
Balangir ..	53 (595)	343 (1283)	11,113 (14843)	6,588 (11368)
Cuttack ..	541 (7389)	6,287 (16561)	12,383 (14396)	7,131 (9142)
Dhenkanal ..	53 (1207)	621 (2163)	8,151 (11533)	3,702 (7089)
Ganjam ..	999 (3470)	3,065 (4192)	38,033 (44146)	8,723 (14835)
Kalahandi ..	30 (419)	108 (555)	7,634 (10511)	2,190 (5067)
Kendujhar ..	51 (1065)	419 (1667)	5,313 (6119)	1,374 (2180)
Koraput ...	936 (2285)	1,955 (4046)	14,201 (15333)	2,631 (9764)
Mayurbhanj ..	25 (1987)	534 (3198)	7,897 (8835)	776 (2114)
Phulabani ..	30 (402)	119 (742)	1,473 (3128)	642 (2297)
Puri ..	39 (512)	318 (902)	13,177 (18220)	4,682 (9725)
Sambalpur ..	163 (1201)	568 (1975)	9,009 (11635)	2,667 (6293)
Sundargarh ..	18 (677)	502 (1711)	4,720 (5552)	1,824 (4956)
Orissa ..	3,138 (35309)	17,385 (54464)	1,37,491 (168838)	43,636 (83836)

APPENDIX III—*Concl'd.*

(Figures in hectares)

Name of the district (1)	Total from all sources	
	Kharif (10)	Rabi (11)
Baleshwar ..	69,089 (106197)	25,452 (36452)
Balangir ...	64,728 (79721)	30,067 (35312)
Cuttack ..	2,36,397 (232078)	1,34,410 (131783)
Dhenkanal ..	43,213 (54429)	12,063 (15712)
Ganjam ..	2,23,775 (246196)	24,875 (22417)
Kalahandi ..	34,988 (41148)	8,412 (12923)
Kendujhar ..	13,868 (28475)	6,644 (4534)
Koraput —	38,522 (51221)	9,972 (22197)
Mayurbhanj ..	45,022 (52788)	5,036 (12012)
Phulabani ..	31,523 (37167)	4,443 (5872)
Puri ..	1,69,154 (206057)	89,215 (125632)
Sambalpur ..	1,39,687 (159101)	82,909 (88455)
Sundargarh ..	23,281 (27529)	6,763 (9459)
Orissa ..	11,33,247 (1322107)	4,40,261 (522760)

APPENDIX IV

CROP-WISE IRRIGATED AREA IN ORISSA FOR THE YEAR 1978-79

(Area in thousand hectares)

Name of the district		Kharif paddy		Summer paddy	
		Total	Irrigated	Total	Irrigated
(1)		(2)	(3)	(4)	(5)
Balashwar	..	386.00	64.70	10.55	10.55
Balangir	..	267.00	53.62	27.24	27.24
Cuttack	..	572.00	224.01	17.86	17.86
Dhenkanal	..	262.00	35.06	2.37	2.37
Ganjam	..	337.00	185.74	5.07	5.07
Kalahandi	..	276.00	27.35	2.25	2.25
Kendujhar	..	222.00	8.56	0.32	0.32
Koraput	..	372.00	24.32	5.83	5.83
Mayurbhanj	..	354.00	37.12	1.01	1.01
Phulabani	..	88.00	30.06	0.74	0.74
Puri	..	373.00	155.98	17.40	17.40
Sambalpur	..	476.00	130.68	72.76	72.76
Sundargarh	..	222.00	18.56	1.58	1.58
Orissa	..	4,207.00	995.76	164.98	164.98

APPENDIX IV—Contd.

(Area in thousand hectares)

Name of the district	Jute		H. Y. Wheat		Maize (Rabi)	
	Total	Irrigated	Total	Irrigated	Total	Irrigated
(1)	(6)	(7)	(8)	(9)	(10)	(11)
Baleshwar ..	9.25	1.40	5.79	5.79	0.17	0.17
Balangir —	0.02	..	6.62	..	0.26	..
Cuttack ..	35.75	18.10	7.80	7.80	0.49	0.49
Dhenkanal ..	0.10	..	3.43	3.43	0.83	0.83
Ganjam ..	0.18	..	0.78	0.78	0.32	0.32
Kalahandi ..	0.05	..	8.17	3.17	0.22	0.22
Kendujhar ..	2.39	0.10	1.77	1.77	0.12	0.12
Koraput ...	0.13	..	4.88	..	1.40	..
Mayurbhanj ..	0.65	..	3.45	3.45	0.22	..
Phulabani ..	0.03	..	1.33	1.33	0.05	0.05
Puri ..	0.70	0.40	1.45	1.45	0.28	0.28
Sambalpur —	0.03	..	9.71	4.71	0.38	0.28
Sundargarh ..	..	..	5.03	4.03	0.09	0.09
Orissa ..	49.28	20.00	60.21	37.71	4.83	2.85

APPENDIX IV—*Contd.*

(Area in thousand hectares)

Name of the district	Pulses (Rabi)		Mustard (Rabi)	
	Total	Irrigated	Total	Irrigated
(1)	(12)	(13)	(14)	(15)
Baleshwar ..	54.34	4.24	6.29	2.83
Balangir ..	52.21	..	6.65	..
Cuttack ..	320.83	44.00	16.73	10.66
Dhenkanal ..	79.61	2.84	7.96	1.89
Ganjam ..	234.58	11.33	6.04	0.89
Kalahandi ..	109.04	2.00	27.94	1.34
Kendujhar ..	26.58	1.16	5.61	0.78
Koraput ..	68.17	0.40	20.75	0.20
Mayurbhanj ..	39.31	2.23	6.69	1.48
Phulabani ..	42.05	0.99	23.77	0.66
Puri ..	229.16	17.60	8.12	2.45
Sambalpur ..	27.34	3.00	10.41	2.52
Sundargarh ..	34.51	2.00	5.07	2.39
Orissa ..	1,317.73	91.79	152.03	28.09

APPENDIX IV—*Contd.*

(Area in thousand hectares)

Name of the district		Groundnut (Rabi)		Sugarcane	
		Total	Irrigated	Total	Irrigated
(1)		(16)	(17)	(18)	(19)
Baleshwar	..	3.55	1.18	2.03	1.43
Balangir	..	0.50	..	4.67	1.97
Cuttack	..	45.58	15.19	6.04	4.61
Dhenkanal	..	2.15	0.72	3.67	2.36
Ganjam	..	3.22	1.07	5.35	3.48
Kalahandi	..	0.44	0.15	4.55	2.05
Kendujhar	..	0.14	0.05	0.65	0.47
Koraput	..	0.50	0.17	6.12	3.04
Mayurbhanj	..	0.31	0.10	0.47	0.29
Phulabani	..	0.02	..	1.14	0.74
Puri	..	9.73	3.24	4.91	4.35
Sambalpur	..	1.22	..	5.92	4.38
Sundargarh	..	0.03	..	0.68	0.18
Orissa	..	67.39	21.87	46.20	29.35

APPENDIX IV—*Concid,*

(Area in thousand hectares)

Name of the district	Potato		Vegetable and other crops irrigated	Gross cropped area irrigated
	Total	Irrigated		
(1)	(20)	(21)	(22)	(23)
Baleshwar ..	0.10	0.10	10.52	102.90
Balangir ..	0.10	0.10	11.81	94.74
Cuttack ..	3.67	3.67	42.04	388.43
Dhenkanal ..	0.58	0.58	9.34	59.42
Ganjam ..	0.37	0.37	31.44	240.49
Kalahandi .	0.02	0.02	3.17	41.72
Kendujhar ..	0.12	0.12	8.99	22.44
Koraput ..	0.44	0.44	13.02	47.42
Mayurbhanj ..	0.16	0.16	7.59	53.43
Phulabani ..	0.32	0.32	2.41	37.30
Puri ..	1.43	1.43	32.60	237.18
Sambalpur ..	0.81	0.81	8.67	227.53
Sundargarh ..	0.36	0.36	3.88	33.07
Orissa ..	8.48	8.48	185.48	1,586.07

APPENDIX V (A)

Year		Estimates of Area sown	
		Net	Gross
1970-71	..	5,601,000	6,761,000
1971-72	..	5,765,000	6,874,000
1972-73	..	5,622,000	6,936,000
1973-74	..	5,973,000	7,284,000
1974-75	..	5,719,000	7,134,000
1975-76	..	6,137,000	7,733,000
1976-77	..	5,877,000	7,209,000
1977-78	..	5,997,000	7,931,000
1978-79	..	6,097,000	8,276,000

APPENDIX V (B)

Cropped area

000' Hectares

Year		Kharif	Rabi	Annual (Sugar- cane tree crops)	Total
(1)		(2)	(3)	(4)	(5)
1973-74	..	5,630	1,497	157	7,284
1974-75	..	5,354	1,613	167	7,134
1975-76	..	5,769	1,800	164	7,733
1976-77	..	5,527	1,512	170	7,209
1977-78	..	5,613	2,140	178	7,931
1978-79	..	5,675	2,404	196	8,276

APPENDIX V (C)

Estimates of area and production of different crops during 1978-79

A : Area in hectares

P : Production in tonnes

Y : Yield rate in quintals per hectare

Name of the crops	Kharif		
	A	P	Y
(1)	(2)	(3)	(4)
Rice ..	42,07,000	41,89,000	9.96
Wheat ..	..	..	..
Ragi ..	242,308	179,332	7.40
Maize ..	126,061	114,734	9.10
Jowar ..	32,988	24,416	7.40
Bajara ..	8,201	4,239	5.17
Small millets ..	230,673	102,845	4.46
Total cereals ..	48,47,231	46,14,566	9.52
Tur ..	69,953	36,029	5.15
Gram ..	..	..	..
Mung ..	53,407	27,854	5.22
Biri ..	77,981	37,918	4.86
Kulthi ..	11,152	4,866	4.36
Cow-pea ..	21,151	9,989	4.72
Field-pea ..	..	..	..
Other pulses ..	14,680	6,448	4.39
Total pulses ..	2,48,324	12,31,04	4.96
Total foodgrains ..	50,95,555	47,37,670	9.30

APPENDIX V (C)—Contd.

Name of the crops (1)	Kharif		
	A (2)	P (3)	Y (4)
Groundnut ..	76,487	87,281	11.41
Til ..	79,097	34,154	4.32
Castor ..	13,655	7,543	5.52
Mustard ..	..	..	..
Linseed ..	..	..	..
Total five major oil-seeds	1,69,239	1,28,978	7.62
Nigar ..	40,197	14,498	3.61
Sunflower ..	266	111	4.17
Safflower ..	..	..	..
Total oil-seeds ..	2,09,702	1,43,587	6.84
Jute ..	49,280 (bales of 180 kg. each)	439,000	8.91
Mesta ..	36,640 (bales of 180 kg. each)	203,500	5.55
Sunhemp ..	11,128 (bales of 180 kg. each)	40,527	3.61
Cotton ..	6,000 (bales of 180 kg. each)	6,742	1.12
Sugarcane ..	..	..	..
Total vegetables (including potato)	2,19,882	1,429,337	65.00
Chilli ..	22,878	13,793	6.03
Corriander ..	..	..	..
Garlic ..	..	..	..
Ginger ..	3,429	2,912	8.49
Turmeric ..	20,680	15,239	7.37
Tobacco ..	..	..	..

APPENDIX V (C)—Contd.

Name of the crops	Rabi		
	A	P	Y
(1)	(5)	(6)	(7)
Rice ..	164,980	212,870	12.90
Wheat ..	61,540	110,018	17.88
Ragi ..	35,000	30,103	8.60
Maize ..	4,821	6,357	13.18
Jowar ..	..	..	..
Bajara ..	..	..	..
Small millets ..	..	..	..
Total cereals ..	266,341	359,348	13.49
Tur ..	..	..	..
Gram ..	44,624	23,385	5.24
Mung ..	575,558	302,992	5.26
Biri ..	268,282	145,196	5.41
Kulthi ..	328,893	151,163	4.60
Cow-pea ..	4,008	1,994	4.98
Field-pea ..	25,877	12,083	4.67
Other pulses ..	70,533	31,317	4.45
Total pulses ..	1 317,775	668,130	5.07
Total foodgrains ..	1,584,116	1,027,478	6.49

APPENDIX V (C)—Contd.

Name of the crops	Rabi		
	A	P	Y
(1)	(5)	(6)	(7)
Groundnut ..	67,390	104,474	15.50
Til ..	83,419	43,811	5.25
Castor ..	23,574	13,024	5.53
Mustard ..	1,52,033	68,419	4.50
Linseed ..	32,827	14,158	4.31
Total five major oil-seeds	359,243	2,43,886	6.78
Niger ..	89,604	36,802	4.11
Sunflower ..	1,104	504	4.89
Safflower ..	4,480	135	4.77
Total oil-seeds ..	454,431	2,83,363	6.23
Jute ..	..	..	..
Mesta ..	..	..	..
Sunhemp ..	..	..	..
Cotton ..	580	605	1.04
Sugarcane ..	46,000	281,000 (gur)	61.09
Total vegetables (including potato)	273,177	1,994,617	73.02
Chilli ..	44,595	31,002	6.95
Corriander ..	15,244	6,950	4.56
Garlic ..	12,033	24,293	20.19
Ginger ..	..	..	..
Turmeric ..	..	..	..
Tobacco ..	19,606	9,646	4.92

APPENDIX V (C) -- *Contd.*

Name of the crops	(1)	Total		
		A	P	Y
		(8)	(9)	(10)
Rice	...	43,71,980	4,401,870	10.07
Wheat	..	61,540	1,10,018	17.80
Ragi	..	2,77,308	2,09,435	7.55
Maize	..	1,30,882	1,21,091	9.25
Jowar	...	32,988	24,416	7.40
Bajara	..	8,201	4,239	5.17
Small millets	...	2,30,673	1,02,845	4.46
Total cereals	..	51,13,572	4,973,914	9.73
Tur	..	69,953	36,029	5.15
Gram	...	44,624	23,385	5.24
Mung	...	6,28,965	3,30,846	5.26
Biri	..	3,46,263	1,83,114	5.29
Kulthi	..	3,40,045	1,56,029	4.59
Cow-pea	..	25,159	11,983	4.76
Field-pea	..	25,877	12,083	4.67
Other pulses	...	85,213	37,765	4.43
Total pulses	..	15,66,099	791,234	5.05
Total foodgrains	..	66,79,671	57,65,148	8.63

APPENDIX V (C)—*Concl'd.*

Name of the crops	Total		
	A	P	Y
(1)	(8)	(9)	(10)
Groundnut ..	1,43,877	1,91,755	13.33
Til ..	1,62,516	77,965	4.80
Castor ..	37,229	20,567	5.53
Mustard ..	1,52,033	68,419	4.50
Linseed ..	32,827	14,158	4.31
Total five major oil-seeds	5,28,482	372,864	7.05
Niger ..	1,29,801	51,300	3.95
Sunflower ..	1,370	651	4.75
Safflower ..	4,480	2,135	4.77
Total oil-seeds ..	6,64,133	4,26,950	6.43
Jute ..	49,280 (bales of 180 kg. each)	4,39,000	8.91
Mesta ..	36,640 (bales of 180 kg. each)	203,500	5.55
Sunhemp ..	11,218 (bales of 180 kg. each)	40,527	3.61
Cotton ..	6,580 (bales of 180 kg. each)	7,347	1.12
Sugarcane ..	46,000 (gur)	2,81,000	61.09
Total vegetables (including potato)	4,93,059	3,423,954	69.44
Chilli ...	67,473	44,799	6.64
Corriander ..	15,244	6,950	4.56
Garlic ...	12,033	24,293	20.19
Ginger ..	3,429	2,912	8.49
Turmeric ..	20,680	15,239	7.37
Tobacco ..	19,606	9,646	4.92

APPENDIX V (D)**Physical Targets and Achievements of Agricultural Production
in Orissa**

Item	Unit	1st Plan	2nd Plan	3rd Plan	Three Annual Plans	4th Plan
(1)	(2)	(3)	(4)	(5)	(6)	(7)
(a) Rice	000 Tonnes	2101	3743	3241	3976	4404
(b) Wheat	Ditto	3	4	10	16	83
(c) Other Cereals	Ditto	53	62	120	283	313
(d) Pulses	Ditto	257	219	314	446	475
(e) Total Food-grains	Ditto	2414	4028	3685	4721	5275
(f) Oil-seeds (five major oil-seeds)	Ditto	66	70	112	170	246
(g) Jute and Mesta	000 bales of 180 kg.	290	304	296	410	576
(h) Sugarcane	Tonnes of gur	93	74	177	211	241
Area under high yielding variety crops						
Paddy	000 hectares	..	..	..	147	358
Wheat	Ditto	..	..	..	4	46
Maize	Ditto	..	..	..	5	13
Jowar	Ditto	..	..	..	1	2

APPENDIX V (D) *Contd.*

Item	Unit	5th Plan	1978-79	
			Target	Achie- vement
(1)	(2)	(8)	(9)	(10)
(a) Rice	000' tonnes	4319	5000	4402
(b) Wheat	Ditto	127	360	110
(c) Other Cereals	Ditto	436	451	463
(d) Pulses	Ditto	679	784	791
(e) Total Foodgrains	Ditto	5561	6595	5766
(f) Oil-seeds (five major oil-seeds)	Ditto	284	643	373
(g) Jute and Mesta	000' bales of 180 kg.	620	760	643
(h) Sugarcane	Tonnes of gur	260	320	281
Area under high yielding variety crops.				
Paddy	000' hectare	647	1100	867
Wheat	Ditto	66	200	60
Maize	Ditto	36	38	36
Jowar	Ditto	3	8	8

APPENDIX V(D) *Concl'd.*

Item	Unit	1979-80		1980-81	
		Target	Anticipated Achievement	Target	Achievement
(1)	(2)	(11)	(12)	(13)	(14)
(a) Rice	000' Tonnes	4959	2918	5315	4301
(b) Wheat	Ditto	180	82	270	122
(c) Other Cereals	Ditto	479	305	508	668
(d) Pulses	Ditto	1316	567	948	886
(e) Total Foodgrains	Ditto	6934	3872	7041	5977
(f) Oil-seeds (five major oil-seeds)	Ditto	885	239	934	416
(g) Jute and Mesta	000' bales of 180 kg.	813	507	880	519
(h) Sugarcane	Tonnes of gur	329	281	360	306
Area under high yielding variety crops					
Paddy	000' hectare	1220	942	1500	1207
Wheat	Ditto	100	49	150	67
Maize	Ditto	45	41	55	54
Jowar	Ditto	10	5	13	4

APPENDIX VI

Changes in Cropping Pattern in Orissa 1971-72 and 1978-79

Area 000' hectares

Food crop	1971-72	1978-79	Percentage variation between 1971-72 and 1978-79
(1)	(2)	(3)	(4)
Rice			
Autumn ..	847	914	(+)7.9%
Winter ..	3,637	3,293	(-)9.4%
Summer ..	162	165	(+)1.8%
Wheat ..	21	62	(+)195.2%
Maize ..	75	131	(+)74.6%
Ragi ..	160	277	(+)73.1%
Other Cereals ..	186	271	(+)45.7%
Total Cereals ..	5,088	5,113	(+)0.5%
Pulses ..	861	1,566	(+)81.9%
Total Food crops ..	5,949	6,679	(+)12.3%

APPENDIX VI Concl'd.

Food crop	1971-72	1978-79	Percentage variation between 1971-72 and 1978-79
(1)	(2)	(3)	(4)
Other Crops			
Oil-seeds ..	340	664	(+)95.3%
Fibres ..	91	104	(+)14.3%
Sugarcane ..	31	46	(+)48.4%
Tobacco ..	14	20	(+)42.9%
Potato ..	7	8	(+)14.3%
Sweet Potato ..	25	48	(+)92.0%
Vegetables ..	278	493	(+)77.3%
Condiments and spices ..	56	119	(+)112.5%
Total Non-food crops ..	842	1,502	(+)78.4
Total Food and non-food	6,791	8,181	(+)20.5
Gross cropped area in- cluding three crops and others.	6,874	8,275	(+)20.4

APPENDIX VII

Comparative statement indicating the average yield rate of major crops in Orissa and India during the years 1975-76, 1976-77 and 1977-78

Figures in quintals per hectare

Name of the Major crops	Orissa average		
	1975-76	1976-77	1977-78
(1)	(2)	(3)	(4)
I. Foodgrains			
Rice Autumn ..	55.8	4.4	7.1
Rice Winter ..	10.2	7.6	10.2
Rice Summer ..	14.3	15.2	14.1
Total Rice ..	9.7	7.4	9.8
Jowar (Kharif) ..	6.6	5.7	6.5
Jowar (Rabi) ..	..	..	..
Bajra ..	5.0	4.5	4.4
Maize ..	9.8	8.3	8.6
Ragi ..	7.3	5.4	7.1
Small Millets ..	4.4	4.0	4.5
Wheat ..	17.1	17.7	18.9
Barley ..	..	..	..
Total Cereals ..	9.4	7.2	9.5
Gram ..	4.8	4.3	5.0
Tur ..	5.4	4.0	5.3
Other Kharif pulses ..	3.2	3.7	4.8
Other Rabi pulses ..	3.7	4.3	5.0
Total Pulses ..	4.6	4.2	5.0
Total Foodgrains ..	8.6	6.8	8.5

APPENDIX VII Contd.

Figures in quintals per hectare

Name of the Major crops	Orissa average		
	1975-76	1976-77	1977-78
(1)	(2)	(3)	(4)
II. Oil-seeds			
Groundnut ..	12.3	11.3	12.2
Castor seed ..	5.5	4.8	4.9
Sesamum ..	4.5	3.9	4.6
Mustard ..	4.7	3.9	4.4
Linseed ..	4.3	3.7	4.1
Total—Five major Oil-seeds ..	6.9	6.3	6.7
Niger seed ..	4.2	3.6	3.8
Safflower ..	4.5	4.3	4.2
III. Fibres			
Jute (Bales of 180 kg. each) ..	7.7	8.7	8.6
Mesta Ditto ..	5.4	5.0	5.4
Cotton Ditto ..	..	..	..
Sunhemp Ditto ..	4.7	3.5	3.9
IV. Other crops			
Sugarcane (Gur) ..	65.6	62.0	60.5
Potato ..	86.2	70.5	67.5
Tobacco ..	6.6	4.7	4.3
Chilli (Dry) ..	6.0	5.9	5.0
Ginger (Dry) ..	11.4	7.8	7.7

APPENDIX VII *Contd.*

Figures in quintals per hectare

Name of the Major crops	All India average		
	<div>1975-761976-771977-78</div>		
	(1)	(5)	(6)	(7)

I. Foodgrains				
Rice Autumn	..	12.4	10.7	13.6
Rice Winter	..	11.8	10.5	12.3
Rice Summer	..	19.5	18.9	19.5
Total Rice	..	12.5	10.9	13.2
Jowar (Kharif)	..	6.8	7.3	8.4
Jowar (Rabi)	..	4.3	..	..
Bajra	..	4.9	5.4	4.3
Maize	..	11.7	10.6	10.4
Ragi	..	9.9	8.2	10.9
Small Millets	..	4.6	3.7	4.5
Wheat	..	14.1	13.9	14.8
Barley	..	11.2	10.5	11.6
Total Cereals	..	10.4	9.8	11.8
Gram	..	7.1	6.8	6.6
Tur	..	7.8	6.7	7.2
Other Kharif pulses	..	3.0	2.9	3.1
Other Rabi pulses	..	4.9	4.1	4.2
Total Pulses	..	5.3	4.9	5.0
Total Foodgrains	..	9.4	8.9	9.9

APPENDIX VII Concl'd.

Figures in quintals per hectare

Name of the Major crop (1)	All India average		
	1975-76 (5)	1976-77 (6)	1977-78 (7)
II. Oil-seeds			
Groundnut ..	9.5	7.5	8.5
Castor seed ..	3.9	3.6	4.7
Sesamum ..	2.1	1.9	2.1
Mustard ..	5.8	5.0	4.6
Linseed ..	2.9	2.2	2.6
Total—Five major Oil-seeds	6.6	5.3	5.8
Niger seed ..	2.5	2.0	2.4
Safflower ..	3.2	3.2	2.7
III. Fibres			
Jute (Bales of 180 kg. each)	7.6	7.3	6.7
Mesta Ditto ..	4.4	5.0	4.9
Cotton Ditto ..	..	..	..
Sunhemp Ditto ..	4.3	2.3	2.5
IV. Other crops			
Sugarcane (Gur) ..	52.7	55.3	58.3
Potato ..	116.5	115.7	122.7
Tobacco ..	9.4	9.7	9.9
Chilli (Dry) ..	6.7	5.4	6.1
Ginger (Dry) ..	16.2	16.9	18.3

APPENDIX VIII

AREA PRODUCTION AND YIELD RATE OF VEGETABLE CROPS IN ORISSA

(Area in hectares)

No.	Districts	Net area sown	Area under Kharif vegetables	Area under Rabi vegetables
(1)	(2)	(3)	(4)	(5)
1.	Baleshwar ..	4,24,000	12,947	29,422
2.	Balangir ..	4,04,000	18,453	16,916
3.	Cuttack ..	7,05,000	30,055	51,925
4.	Dhenkanal ..	3,93,000	12,554	15,041
5.	Ganjam ..	5,01,000	17,371	15,776
6.	Kalahandi ..	4,88,000	16,239	24,282
7.	Kendujhar ..	2,94,000	8,787	11,708
8.	Koraput ..	8,56,000	32,390	28,475
9.	Mayurbhanj ..	4,29,000	11,336	15,973
10.	Phulabani ..	2,25,000	9,623	7,001
11.	Puri ..	4,66,000	19,805	22,646
12.	Sambalpur ..	6,22,000	20,509	22,823
13.	Sundargarh ..	2,90,000	9,843	8,189
Total ..		60,97,000	2,19,912	2,70,177

APPENDIX VIII Concl'd.

(Area in hectares)

No.	Districts	Total area with vegetables	Production in tonnes	Yield rate in quintal per hectare
(1)	(2)	(6)	(7)	(8)
1.	Balashwar ..	42,369	4,12,114	97.27—
2.	Balangir ..	35,369	1,74,894	49.45X
3.	Cuttack ..	84,980	6,35,726	74.81—
4.	Dhenkanal ..	27,595	2,09,032	75.75—
5.	Ganjam ..	33,147	2,21,198	66.73
6.	Kalahandi ..	40,521	2,22,272	54.85X
7.	Kendujhar ..	20,495	78,806	38.45X
8.	Koraput ..	60,865	3,62,132	59.50X
9.	Mayurbhanj ..	27,279	2,51,384	98.15—
10.	Phulabani ..	16,624	81,879	49.26X
11.	Puri ..	42,451	3,45,879	81.48—
12.	Sambalpur ..	43,332	2,96,071	68.33
13.	Sundargarh ..	18,032	1,32,757	73.52
Total ..		4,93,059	34,24,144	69.44

6. ANIMAL HUSBANDRY AND DAIRY DEVELOPMENT**Live-stock**

The live-stock population in Orissa as per 1977 Census is given below.

	In lakhs
A. (i) Cattle	121.21
(ii) Buffalo	13.58
(iii) Sheep	14.32
(iv) Goats	34.16
(v) Pigs	2.95
(vi) Others	0.04
B. (i) Fowls	92.21
(ii) Ducks	2.12
(iii) Others	0.57

The quality of live-stock is greatly influenced by the agro-climatic conditions of the state. The factors which are responsible are the conditions of the soil, rainfall, temperature, etc., of the region. The average rainfall of the state is above 120 cm. and it comprises Eastern Ghats mountains and its coastal belts. Paddy is the main cereal crop and paddy straw is the staple fodder for the animals of the state.

Hardly any fodder crop is grown by the farmers. Thus the animals are by large unproductive, non-descript and poorly fed. The cattle and buffaloes are non-descript. The cattle are poor milk producers and sustain on poor quality paddy straw. An indigenous cow yields about 200 litres to 600 litres of milk per lactation. There is no recognised breed of cattle in Orissa. There are 2 local breeds viz., "Binjharpuri" and "Ghumsuri" according to the names of their locality which are Binjharpur in Cuttack district and Ghumusur or Bhanjanagar in Ganjam district respectively. Their milk yields are better than the indigenous non-descript cows.

The buffaloes are generally used for agricultural operations and carting. There is also a local breed of buffalo called "Paralakhemundi" which are utilised for draught purpose and the home tract of this breed is Paralakhemundi subdivision of Ganjam district.

The sheep, pig and poultry population are non-descript type and there is no recognised breed in Orissa. Black Bengal and Ganjam are the only two recognised breeds of goats available in the state.

The cattle, goat and sheep population in Orissa mainly depend on pastures and grazing grounds. Orissa has 5,43,000 hectares of Gochar land, 25,000 square km. of reserved forest, 35,000 sq. km. of protected forests and 15 sq. km. of unclassified forest land where the animals generally graze. The by-products of paddy cultivation, i.e., straw and rice husks also supplement the feeding of animals.

Pasture development programme was initiated for the first-time in Orissa during 1976-77. Over 400 acres (162 hectares), including 95 acres (38 hectares) of forest land, was brought under improved grass cultivation as a measure of pasture development.

The Gochar Development Programme was also taken up in the state and 45 acres (18 hectares) of land was brought under Gochar development in Sundargarh, Puri and Koraput districts.

In order to make the state self-sufficient with regard to production of fodder seeds and planting materials, four modern fodder seed development farms have been established at Panchamaharaj, Salpada, Chipilima and Jaypur with an area of 43.90 hectares, 40.67 hectares, 20.23 hectares and 38.42 hectares of land respectively. Besides, two smaller seed multiplication units of 8 hectares each at Boudh and Bhawanipatna have been established.

Under the Government of India's Minikit programme, a total number of 1,760 minikits were distributed to interested farmers for raising fodder in their own land. This minikit contains booklets, fertilisers and seeds of high germinating quality.

Besides all these programmes, fodder tree plantation programme has also been taken up since 1976-77. The following varieties of fodder trees have been selected and nurseries developed with their seeds for further multiplication. 1. Koo-babul, 2. Acacia species, 3. Casia species, and 4. Agasti. Since availability of land and irrigation pose a problem for taking up irrigated fodder cultivation, special drive has been launched to encourage cultivation of fodder trees in farmers land. Till now, about 75,000 such trees have been planted in the state and this drive is in full swing.

Similarly, under pasture development programme, para-grass was cultivated in the low-lying road side barrow pits on both the sides of the National highway between Cuttack and Bhubaneswar

where in about 31 hectares of land has been covered. This programme was intended to be extended to other areas also, but it has since fallen into disuse.

The concentrated ration required for the cattle and poultry is being prepared in the five feed mixing centres situated in different places of the state. These places are Sundargarh, Anugul, Remuna, Bhanjanagar and Koraput. The State Poultry Federation is manufacturing poultry mineral mixture to economise the cost of poultry feeding. Besides, a semi-government institution, the Orissa Agro-Industries Corporation also manufactures and markets the concentrated feeds for cattle and poultry with brand names. Some other farms also prepare and market concentrated ration for animals.

Measures to improve the quality of local breed cattle

After independence, a new breeding policy was introduced in Orissa to upgrade the local indigenous cattle through bulls of Red Sindhi and Hariyana breed. The idea was to increase the milk production capacity of cows as well as to produce better type of draught bullocks. This programme was taken up in different K. V. Blocks, A. I. Centres and I. C. D. Projects of the state. This upgrading programme produced superior draught type bullocks in a few areas but the increase in milk production could not keep pace with the nutritional requirements of the population.

Hence in the year 1964, exotic animals like Jersey were introduced for the first-time in Orissa. Under Hill Cattle Development Project, Koraput was taken on an experimental basis for crossbreeding of indigenous cattle. The result was very encouraging. These crossbreed animals proved to survive in our agro-climatic conditions and their performance was highly encouraging. Hence this crossbreeding programme was extended to K. V. Blocks, A. I. Centres and I. C. D. Projects from the year 1969 in a phased manner, the urban areas being given priority. Artificial Insemination was accepted as the main tool of cattle development through genetic improvement. There are 1281 A. I. Centres in the state. During sixth plan 17.50 lakh crossbreed cows were inseminated resulting in production of about 2.30 lakh crossbreed heifers which contributed substantially to milk production. Artificial insemination with frozen semen technology has proved to be far superior to conventional liquid semen system. One frozen semen bank with DANIDA assistance has been established at Cuttack to produce frozen semen from superior exotic and crossbred bulls. During the sixth plan 550 A. I. Centres have already been covered under this technique.

Goat

The Black Bengal and Ganjam breeds of goats are available in the state. These two breeds are moderately good meat producers. The state has moderately high rainfall and is not suitable for milch type of goats. The Black Bengal and Ganjam breeds have managed to exist mainly because of their capacity to adapt to meagre feeding conditions and heavy rainfall. Black Bengal goats are short-legged and small in body size. The average weight of does is 15 kg. and bucks 20 kg. The Ganjam goats are long-legged, larger in body size, the average body weight of does being 20 kg. and that of bucks 30 kg. Multiple births are common to Black Bengal but in case of Ganjam goats even twinning is not common. Beetal breed which is a milch type breed of Punjab state has been introduced in this state to upgrade the indigenous stock. During two years ending in 1978-79, 550 Beetal bucks were procured from Delhi area and distributed in the special project areas for upgrading of local goat. The goat multiplication farms have been established at Chipilima and Khajuripada in this state. Beetal does and bucks are being reared in these farms. Selective breeding is being practised in these farms for the improvement of this breed under local agro-climatic conditions. The superior Beetal bucks thus produced are supplied to different beneficiary-oriented programmes such as S. F. D. A./M. F. A. L./I. T. D.A./D. P. A. P./I. R. D. P./ etc. 21,988 goat and sheep rearing units were established by 1978-79 under these beneficiary programmes. Each unit consists of 4 or 5 does.

Sheep

The low productivity and poor quality of mutton and wool of the indigenous non-descript type of sheep of the state act as a limiting factor in developing sheep. The agro-climatic conditions of the state is not favourable for rearing of sheep for wool. The hot and humid climate of the state can only favour development of sheep for mutton. There are two sheep breeding farms in the state at Chipilima (Sambalpur) and Deogan (Balangir). Corriedale, an exotic dual purpose breed, and Bannur, a South Indian mutton type breed, are being maintained in these two sheep breeding farms. Selective breeding of Bannur breed is being practised for the improvement of the breed under local conditions. The superior Bannur rams thus produced are supplied to the farmers. Under different beneficiary-oriented programmes for upgrading the indigenous non-descript stock, further, crossbreeding of Corriedale rams with Bannur ewes and with local breed ewes is being practised to produce crossbred (F) rams. Then intense mating of halfbreeds (f1) is being adopted to fix the exotic inheritance at 50 per cent level. The rams thus produced are also being used for crossbreeding of the indigenous

sheep under all special projects. Sheep production under special livestock production programme is operating in Balangir district where sheep rearing is more favourable than other districts. 350 sheep rearing units with 20 ewes and one ram have been established in Balangir district so far. Besides, sheep rearing units comprising 10 ewes and one ram are being organised under I. R. D. programme in other districts of the state.

Pigs

In order to supply quality pigs noted for rapid growth and high food conversion efficiency, the pig breeding farm at Chipilima is being stocked with four exotic breeds of pigs, viz., Large white York-shire, Middle white York-shire, Hampshire and Landrace to supply crossbred sows and boars to project areas. The pig breeding farm at Bhanjanagar in Ganjam district has been revived with the funds of I. T. D. Programme. The aim and objective of both these farms is to supply pure bred exotic and crossbred boars for upgrading the indigenous non-descript stock. Besides, pig rearing under special livestock production programme is operating in the districts of Kendujhar and Koraput. 1553 piggery units have been established so far in these two districts. Further, 430 piggery units have been organised under I. T. D. A. and I. R. D. P. within a period of two years.

Poultry

For the improvement of poultry in the state, improved strains of W. L. H. breeds are being produced. This is being extended to villages through Intensive Poultry Development and Special Poultry Development projects and other developmental projects. Nine poultry farms situated in the state supply required number of birds to the project areas and to interested farmers. For encouraging poultry farming, the State Government have set up two broiler farms with parent stock of 500 each at Bhubaneswar and Sundargarh for supply of chicks to farmers and beneficiaries of I. R. D. and E. R. R. P. schemes. The State Poultry Farm at Anugul also produces layer chicks which are required by these beneficiaries. A large number of private broiler farms have also been set up in the state. Thousands of poultry units have been established under I. R. D./E. R. R. P./I. T. D. A. and other beneficiary oriented schemes, as poultry farming is supposed to be highly remunerative because of low capital investment and well-distributed turn over throughout the year. Among the farm animals, poultry is one of the quickest and the most efficient converters of plant products into food of high biological value. But unfortunately in Orissa, poultry farming is not being remunerative owing to non-availability of poultry feed at reasonable rate. As a result huge quantities of eggs are daily coming to Orissa market from Andhra Pradesh.

Ducks

To improve the quality of the indigenous ducks in the state, genetically superior 700 Khaki Campbell ducklings have been imported from England and are being multiplied at Khapuria. The crossbreeds are being supplied to water-logged area of Puri district under I. R. D. scheme for production of eggs and meat. Custom hatching facilities have also been provided to interested farmers of the state to get genetically superior breeds at Khapuria (Cuttack) and Pipili (Puri district).

A list of government poultry farms in the state is given below:—

- | | | |
|--|----|---|
| 1. Government of India Poultry Farm | .. | Bhubaneshwar |
| 2. Regional Poultry Breeding Farm | .. | Sundargarh |
| 3. State Poultry Breeding Farm | .. | Anugul |
| 4. Regional Poultry Breeding Farm | .. | Koraput |
| 5. District Poultry Farm | .. | 3(Balangir, Kendujhar and Bhanjanagar) |
| 6. Special Poultry Farm | .. | 3(Chiplima, Semiliguda and Bhubaneshwar) |
| 7. Intensive Poultry Development Project | .. | 4(Brahmapur, Rourkela, Cuttack, and Bhubaneshwar) |
| 8. Special Poultry Development Projects | .. | 3(Cuttack, Puri and Sambalpur) |

Milk Production, Dairy Farming, Pasturisation Units, etc.,

The annual production of milk in the state is estimated at about 2.50 lakh tonnes by the 5th Plan and 3.50 lakh tonnes by the 6th Plan. It is a very low production. *Per capita* consumption of milk comes to 35 gm. per day. Due to the crossbreeding programme, the *per capita* consumption of milk is expected to be increased to 112gm. by the end of the 6th Plan Period. For proper procurement and marketing of milk, 411 Primary Milk Producer's Co-operative Societies and ten District Milk Unions have been formed. A State Dairy Corporation is going to be set up soon.

Dairy Farming :

The dairy farms situated at different places in the state are managed

by the Government (A. H. Dept.), for producing crossbred animals and to supply milk to nearest towns. The following is a list of dairy farms in Orissa:

Name of dairy farms				No. of animals	No. of crossbred animals
1.	District Cattle Breeding Farm,	Boudh		54	17
2.	District Cattle Breeding Farm,	Bhanjanagar		96	11
3.	District Cattle Breeding Farm,	Kendujhar		123	15
4.	District Cattle Breeding Farm,	Khapuria (Cuttack)		339	124
5.	District Cattle Breeding Farm,	Balangir		212	108
6.	District Cattle Breeding Farm,	Kalahandi		126	49
7.	Rural Dairy Farm,	Remuna		166	131
8.	Rural Dairy Farm,	Kalyani		176	62
9.	Rural Dairy Farm,	Sundargarh		138	106
10.	Rural Dairy Farm,	Kuarmunda		354	179
11.	Exotic Cattle Breeding Farm,	Chipilima		83	80

Operation flood II programme on the lines of Anand pattern of co-operatives in Gujarat is now being implemented in the districts of Cuttack, Puri, Dhenkanal and Kendujhar through OMFED. OMFED has already taken over and expanded the chilling plant at Phulnakhara. It has also set up additional chilling plants at Dhenkanal and Bhubaneswar. In Kalahandi district N. C. D. C. has been setting up a chilling plant and implementing other development programmes in co-operative sector. In Phulabani, Koraput and Balangir districts A. I. programme with frozen semen technology is operating under the central sector scheme which will result in substantial milk production.

Cattle and Poultry diseases, their prevention and treatment, and Technical Personnel

The diseases of cattle and poultry are mainly classified into two categories, i. e., non-contagious and contagious.

Non-contagious diseases

Non-contagious diseases are many and are caused due to varied etiological factors. These may be parasitic and non-parasitic. The faecal samples of cattle and poultry are usually examined periodically at Field Diagnostic laboratories to ascertain the species of parasites involved, if any, and accordingly appropriate treatment is adopted. The non-parasitic diseases and other systemic ailments like tympanities, impaction, diarrhoea, dysentery, colic, stomatitis, pharyngitis, cough, cold, dermatitis, etc. are symptomatically treated at the existing 413 dispensaries and 1195 Live-Stock Aid Centres.

Contagious diseases

Contagious diseases are very widespread and/or sporadic/virulent in nature. These often cause heavy mortality in live-stock and poultry. These diseases are mainly due to either bacterial or viral infections. The chief dreaded diseases among cattle are Anthrax, Haemorrhagic septicaemia, Black quarter, Foot and Mouth disease, Rinderpest and Rabies. The contagious diseases of poultry are Ranikhet and Foul pox. Recently Marek's disease has been found in poultry birds, but this disease is now under control in Orissa. These diseases are timely and effectively dealt with by the veterinary department, before they are widespread. Throughout the year the staff are engaged to vaccinate the live-stock and poultry in order to prevent the occurrence of these diseases. Vaccination is given either free of cost or at subsidised rates.

Technical personnel

The vaccines are prepared at Orissa Biological Products Institute, Bhubaneshwar, headed by a Joint Director, assisted by 3 Deputy Directors. Other personnel are as follows:

- (i) Deputy Director (D. C.) is at the Directorate level to control the outbreaks after proper diagnosis.
- (ii) State Veterinary Laboratory at state level.
- (iii) Range Investigation Laboratories are placed at each Range level.
- (iv) A. D. (D. C.) are placed at Range levels.

(v) A. D. V. O. (D. C.) are placed at district levels.

(vi) Mobile Veterinary Investigation Laboratory in 5 districts.

(vii) V.A.S. at Block level each supported with a field diagnostic laboratory.

Veterinary Institutions, Research Centres, hospitals, etc.

The following is a list of Veterinary Institutions, Research Centres and Hospitals in the state (up to 31-3-1979).

1. No of V. Ds. and Hospitals	...	413
2. No. of L. A. Cs.	..	1,195
3. No. of K. V. Blocks	..	24
4. No. of Extn. K. V. Blocks	..	2
5. No. of K. V. Units	..	238
6. No. of pure A. I. Centres	..	232
7. No. of Normal Centres doing A. I.	..	336
8. Total A. I. Centres	..	568
9. No. of I. C. D. Projects	..	4
10. No. of I. C. D. Zones	..	16
11. No. of I. C. D. Units	..	300
12. No. of L. B. Farms	..	12
13. No. of Semen Collection Centres	..	27
14. No. of Frozen Semen Bank	..	1
15. No. of Bull Centres for natural (including buffaloes) breeding		683
16. No. of sheep breeding farms	..	2
17. No. of goat breeding farms	..	2
18. No. of pig breeding farms	..	2

19.	No. of poultry farms	..	9
20.	No. of A. N. P. Units	..	25
21.	No. of I. P. D. P. Projects	..	3
22.	No. of departmental poultry units	..	9
23.	No. of A. I. P. D. units	..	9
24.	No. of Feed Mixing Centres	..	5
25.	No. of seed production farm	..	3
26.	No. of Pasture and Fodder Dev. Farm under K.V./ I. C. D. Project and D.L.B. farm		21
27.	No. of Veterinary Information Bureau	..	1
28.	No. of Research Laboratory	..	8
29.	Orissa Biological Products Institute	..	1
30.	State Gosadan	..	1
31.	No. of Dist. Milk Producers' Co-operative Union		10
32.	No. of Primary Milk Producer's Co-operative Society		381
33.	No. of Poultry Co-operative Society	..	145
34.	No. of Special Live-stock Production Programme	..	7
35.	No. of S. F. D. A./M. F. A. L. Projects	..	7
36.	No. of D. P. A. P.	..	2
37.	No. of I. T. D. P.	..	19
38.	No. of T. D. A.	..	3
39.	No. of R. P. Follow up scheme	..	8
40.	No. of Checkposts	..	12
41.	No. of Vigilance units	..	4
42.	No. of Mobile Investigation Laboratory	..	5
43.	No. of Mobile Propaganda Units	..	3

7. FISHERIES

Orissa abounds in marine, freshwater and brackish water fishery resources which can contribute substantially towards improving the socio-economic condition of the people.

Water Sources

Water area of different sources of fish supply in the state is as follows:

(a) Sea	480 km. (coastal belt of the state)
(b) Freshwater lakes & Swamps	1,80,000 hectares
(c) Rivers	1,55,400 hectares
(d) Tanks	29,000 hectares
(e) Reservoirs	2,56,000 hectares
(f) Estuarine swamps	8,100 hectares
(g) Estuaries	2,98,000 hectares
(h) Brackish water lake	2,68,000 hectares

Fishermen Communities

In Orissa, there are a lot of fishermen communities. The percentage of fishermen belonging to these communities vary largely. The important fishing communities are known as Keuta, Niari, Gokha, Karatia, Kandara, Tiara and Nolia.

The fishermen belonging to the Keuta community are also known as Kaibarta and Khatia. These fishermen are considered to have belonged to a superior class among the fishermen communities and the percentage of this class is the highest compared with other fishermen communities in the state. The other communities except 'Niari' are considered to be of lower order in social status. Keuta and Niari generally possess improved fishing equipments, such as, nets and boats while others use drag nets, cast nets, fishing traps, etc., for fishing. The fishermen belonging to Nolia class mainly catch fish in the sea and a few in the Chilika lake. They are a group of Telugu fishermen who migrated from Andhra Pradesh to Orissa long back and have settled here.

Pisciculture

Pisciculture is being taken up in the state both by Government and private agencies. The Government agencies, such as, C. D. Department and Department of Fisheries take up pisciculture in the Grama Panchayat tanks and Government Fish Farms respectively.

The private people take up pisciculture in their respective tanks. The total annual production of freshwater fish of the state as in 1978-79 was 19,000 tonnes. The production of fish in the state through piscicultural efforts will be about 60 per cent of the total freshwater fish production. The data outlined below show the production of fish in the state as a whole and of the Fisheries Department for the period 1974-75 to 1978-79.

Year	Production of freshwater fish in the state (in tonnes)	Production of freshwater fish by the Department of Fisheries (in tonnes)
1974-75	14,000	25.0
1975-76	15,000	26.0
1976-77	17,000	32.0
1977-78	18,000	27.2
1978-79	19,000	27.0

Steps have been taken by the Fishery Department for development of pisciculture through private as well as Government sectors. At present there are 98 departmental fish farms in the state. These farms contain provisions for nursery, rearing and stocking.

So far as development of pisciculture in private tanks is concerned various steps have been taken by the department to promote such efforts. Fishery Extension Officers have been posted in the C. D. Blocks who render technical guidance to the villagers for piscicultural developments. At present there is one Fishery Extension Officer in each C. D. Block. Tanks of the private pisciculturists have been developed by the Fishery Department in every district by giving technical guidance as well as inputs so as to make the tanks demonstrative to others. Loans are also given to the interested private pisciculturists by the financing institutions and in such cases the department makes prior survey of the tanks of the pisciculturists so as to examine technically the piscicultural suitability of the tanks and issue feasibility reports to financing institutions for grant of loans. The Fish Farmers Development Agencies give short course fishery training on inland fisheries to the private persons interested for undertaking pisciculture. Likewise various steps are taken by the

Department for development of pisciculture through private sectors. The most important activity in this sector is the establishment of centrally sponsored Fish Farmers Development Agencies (FFDAs.) for development of inland fisheries by private effort by giving subsidy and bank finance. Already 9000 hectares have been developed during the last four years of the sixth plan. Eleven districts are already covered by FFDAs. and two more will be covered during the 7th plan. One major feature of the sixth plan in the fishery sector has been construction of 70 ha. modern fish seed hatcheries under Inland Fisheries Project with World Bank Assistance through Orissa Fish Seed Development Corporation for supply of fry and fingerlings to a large number of pisciculturists sponsored under FFDA scheme and otherwise.

Sea-fishing

Sea-fishing is conducted in the state both by Government sector and private sector. The total production of sea-fish in the state was about 32,000 tonnes in 1978-79. The production of marine fish in the state for the period 1974-75 to 1978-79 is indicated below:

Year	Total marine fish production in the state (in tonnes)	Production of marine fish in Govt. sector (in tonnes)
1974-75	18,000	639
1975-76	21,000	1,484
1976-77	25,000	709
1977-78	28,000	185
1978-79	32,000	171

The Department of Fisheries, Orissa, operated thirty-three power boats for sea-fishing and training from the bases namely Paradeep, Chandipur, Chandbali, Hansua and Rushikulya during 1978-79. Besides, ten power boats were operated from Kirtania fishing base by the Kirtania Fishermen Co-operative Society. About 417 power boats were operated by the private enterprises from Paradeep, Chandipur, Kirtania, Dhamra, Adhuan and Astaranga bases. Even in 1983-84 the annual marine fish production was about 47,000 tonnes which worked out to only 98 tonnes per kilometre of coast-line which is much less than the national average production of 284.2 tonnes per kilometre.

In order to encourage private entrepreneurs for sea-fishing through mechanised boats loans and subsidies are being sanctioned by Government. The Department of Fisheries prepares schemes for fishing industry i.e., fishing by mechanised trawlers, gill-netters, ice plants, etc., and issue feasibility reports in respect of such schemes of the private entrepreneurs so as to enable them to get loans from OSFC and Banks. 1388 nos. of private entrepreneurs have been issued with feasibility reports by the Department of Fisheries for getting loans for mechanised fishing in the fishing bases set up at Paradeep, Dhamra, Chandipur, Astaranga, Kirtania and Adhuan.

Fish landing centres and seasons for particular types of fish

There are 55 numbers of important marine fish landing centres in the state in the four maritime districts namely, Cuttack, Puri, Baleshwar and Ganjam. In the district of Cuttack there are 15 centres located at Talchua, Tantiapal, Keradagarh, Gupti, Hansua, Rajnagar, Jambu, Ramanagar, Binayanagar, Dhanur, Bellary, Harisipur, Biribedi, Paradeep, Balitutha and Atharbanka.

In the district of Puri, the 10 landing centres are at Sahau, Balidiha, Kaliakan, Gundabha, Balabhadrapur, Chandrabhaga, Ramachandi, Tandahar, Balinolia Sahi and Puri (Penthakata).

In the district of Baleshwar there are 19 landing centres namely, Talasari, Kirtania, Adhuan, Hansakara, Kankadapal, Ambachua, Chudamani, Padhuan, Balaji, Balaramgadi, Kasafal, Khandia, Talpada, Anuhasabad, Arana, Bansada, Chandabali, Kavanjamal and Baliapal.

In the district of Ganjam, there are 11 landing centres located at Sonapur, Sorla, Patisonapur, Ramayapatna, Markandi, Gopalpur, Buxipali, Bhenkatrapur, Golabandh, Arjipali, Ganjam and Chhatrapur.

Besides, there are 9 fish landing centres in the Chilika lake out of which 6 are in Puri district, viz., Kaluparaghat, Kuhuri, Bhusandapur, Arkhakuda, Gangadharpur and Balugan and 3 are in Ganjam district viz., Rambha, Keshapur and Gajapatinagar.

Marine fishing in Baleshwar coast begins from August and continues up to March. The main varieties of fishes caught in Baleshwar coast are as follows:

Local name	English name
1. Ilishi	.. Hilsa
2. Chandi and Bahal	.. Pomfret
3. Kora	.. Polynemids
4. Dhama, Bajra	.. Clupeids
5. Telia and Bhola	.. Sciaenids
6. Champa	.. Seerfish
7. Kanta	.. Chorinemus
8. Khanda	.. Chirocentrus

In case of marine fishing in bases of the coastal district like Cuttack, Puri and Ganjam the season begins from September and continues up to March. The following marine types of fishes are caught.

Local name	English name
1. Bagda	.. Tiger Prawn
2. Chapra	.. White Prawn
3. Khopra	.. Brown Prawn
4. Chandi	.. Pomfret
5. Borei	.. Sciaenids/Jenfirl
6. Sahalpunji	.. Polynemids
7. Paniakhi and Fashi	.. Clupeids
8. Bombay duck	.. Harpodon
9. Shark, Rays and Sketes	.. Elasmobranches
10. Kantia	.. Catfish

Fishing Methods

Different fishing methods are adopted in the state for catching fish both from inland water areas, estuaries and seas.

For sea-fishing country-boats have been traditionally used for many years. In recent years, mechanised boats have been introduced for fishing. In Baleshwar coast fish are caught generally by gill

netters in case of inshore fishing and for catching of pelagic fish which are abundant in the region. Trawlers are mostly used for inshore as well as offshore fishing for demersal fish in the coast of Cuttack, Puri and Ganjam. Hooks and long lines are also used to catch fish in the sea in the areas like Kharanasi, Ramanagar and Jambu where Bengalee refugees have been settled.

Traditionally cast nets and drag nets are used in rivers and canals by groups of fishermen.

Fishing Crafts

The simplest and primitive types of crafts used for fishing in inland waters of Orissa are raft, Danga and catamaran. Due to current and tidal movement sturdier plank-built boats are used in the Chilika lake and the river Mahanadi. Plank built boats are extensively used. It has a shallow draught and is a very narrow keelless sailing boat. It is used for fishing with drift net, bottom set net and long lines. The Orissa type catamaran is made up of five logs which are not tied together by ropes but are pegged with wood. It is otherwise known as "Teppa" mostly used in coastal districts of Orissa. The size of the catamaran is 14' to 19' in length with beam $2\frac{1}{2}$ ' to 3'.

Salty

This type of craft is exactly the shape of a catamaran used in Burhabalanga estuaries in Baleshwar district and in river Rushikulya in Ganjam district. Gill nets are operated from these crafts. The craft measures about 20' in length and 13" in height and 15" in breadth.

Masula Boat

It is a non-rigid construction with planks, sown together with coir rope, but without frame or ribs.

Dingi and Nauka

These are the carved boats of Orissa. Its size 13'X3'X2' is quite spacious and used for various purposes. These small riverine and estuarine crafts are employed extensively in the state for operation of Pursenets and Dipnets. They have narrow tapering without keels.

Danger (Dugout)

Danga or dugout cannoes are common in Orissa for angling and cast net fishing. This type of craft is used in Puri coast in Orissa. Its size is 10 to 12 metres in length.

Navas

In the Chilika and in the Mahanadi, plank built boats known as 'Nava' are used. It is used for fishing with draft net, bottom set gill net and long lines without much variation. It measures 30' in length, 5' in breadth and is 2.4" deep. This is used in Burhabalanga and Devi river estuaries of Orissa.

Fishing Nets and Implements

Almost all types of fishing gears are used in different parts of Orissa. Wounding gears like lances, rackers harpoons, bow and arrow are used occasionally for exploitation of fish. Hooks and long lines are mostly used by the Bengalee refugees of coastal villages. Shed barriers like Salua, Patajal and Sahaljal are used in Chilika and Mahanadi estuaries. Kukutjal and Toraniajal are used in different river systems specially in Mahanadi and other estuaries. Gill nets i.e., Suta Jal, Ilishi Jal, Ghai Jal, Saru Jal, Bhasani Jal, and Jagar Jal are used in almost all parts of the state. Bag nets like Mala Jal are also used in different water areas. Other nets used are drag nets i.e., Khadi Jal (Jatadhar mouth and Chilika lake), Munijal (Chilika) Patuajal (Daya river) and trawl. Cast nets i.e., Khepajal are in common use.

Fish Curing

Development of science has played a vital role for creating scope for production of various fishery products, such as, dry fish, fishmeal, fish protein, canned fish, frozen fish, etc. Production of dry fish, and canned fish was taken up departmentally on experimental basis. Commercial application of dried fish and canned fish have not been taken up departmentally so far.

Organisation of Fishing Industries

Stress is being laid in recent years for development of fishing industry. For mechanisation of fishing boats many boat building yards have been set up in the state in private sector. At present, there are about 10 numbers of boat building yards. Besides, for export of prawn and frog legs, private entrepreneurs have established freezing plants in the state. The number of such plants at present is twelve.

Research Centres

Research on fisheries is being conducted at present by the department at Kausalyaganga sub-station of the All India Co-ordinated Research Project on composite or pisciculture of Indian major carps and exotic fishes.

The main object of the Research Station at Kausalyaganga is to augment fish seed production and spawn yielding potential of inland water resources through various breeding experiments.

At Keshapur sub-centre of the All India Co-ordinated Research Project on brackish water fish farming, research is conducted in order to utilise brackish water resources in the state with modern technology and modern method. The research includes the items of survey of brackish water fish seed resources, nursery managements in brackish water ponds, study of ecology of the ponds, stocking density, supplementary feeding, growth study of the stocked prawn, fish, etc.

Fish Trading

About 40 per cent of the total fish production, i.e., both marine and inland are sent to Calcutta and other urban markets outside the state. The rest is marketed inside the state.

The marketing is conducted through three systems, namely, private merchants, Fisheries department and co-operative societies.

The Revenue department of the state lease out the tanks, rivers, irrigation reservoirs, etc., to the private parties who sell the catch to the fish merchants. The merchants control the marketing arrangements.

The Fisheries department has a small marketing wing which supervise marketing arrangements at the urban centres of the state to the extent of 200 tonnes.

Besides, there are a number of Fishermen Co-operative Societies inside the state who take lease of Revenue department's tanks, irrigation reservoirs, river systems, lakes and estuaries from the concerned authorities and arrange marketing within and outside the state.

The volume of fish annually exported outside the state and to foreign countries with its approximate value is given in the following table.

Export outside the state :

Out of total production of fish (both marine and inland in the state) 40 to 45 per cent is exported outside the state. The production and export for the period 1975-76 to 1978-79 are given below:

Year	Total production (in tonnes)	Quantity in tonnes exported (prawn & fish)	Value (in million rupees)
1975-76	46,000	18000	202.3
1976-77	52,000	20800	220.9
1977-78	56,000	22000	263.8
1978-79	61,000	27000	338.4

Export to foreign countries :

Only frozen prawns are exported to the foreign countries, the quantity and value for the period 1975-76 to 1977-78 are given below:

Year	Quantity in tonnes exported	Value (Rs. in lakhs)
1975-76	1063.8	449.8
1976-77	2073.3	1136.9
1977-78	2148.7	848.1
1978-79	2179.2	1279.1

A list of important varieties of fish: freshwater, marine and Chilika (estuarine) found in the state are indicated below:

(a) Freshwater fish

Local name (Oriya)	Scientific name
1. Rohi	.. L. rohita
2. Bhakur	.. C. catla
3. Mirikali	.. C. mrigala
4. Kalabansi	.. L. calbasu
5. Pohala	.. L. bata
6. Kou	.. Anabas testudineus
7. Chital	.. Notapserus chitala
8. Jalanga	.. Silonia silondia
9. Magura	.. Clarias batrachus
10. Chungudi	.. Metapenaeus monoceros

(b) Marine fish

Local Oriya name	Common English name	Scientific name
Baghua Magara	Tiger shark	<i>Stegostoma varius</i>
Munda Magara	Ground shark	<i>Carcharhinus gangi-tious</i>
Chitta Magara	Tiger shark	<i>Galeocerdo articus</i>
Dudhia Magara	Dogfish	<i>Scoliodon palasorha</i>
Jualia Magara or Hathurdia Magara	Hammerhead shark	<i>Sphyrna blochii</i>
Khanda Magara	Hammerhead	<i>Pristis microdon</i>
Pakhi Sankucha or Harinia or Chili	Skates	<i>Actobatus narinari</i>
Sankucha	Rays	<i>Himantura uarnak</i>
Ilisi	Shads	<i>Hilsa ilisha</i>
Ilisa	Shads	<i>Hilsa sinensis</i>
Dhama	Shads	<i>Hilsa toli</i>
Nahama or Jallunga	Clupeids	<i>Elops saurus</i>
Paniakhia or Naham or Vorsa	Clupeids	<i>Megalops Cyprinoi-des</i>
Kabla, Marua	Sardine	<i>Sardinella fimbriata</i>
Kabla, or Ranjipatna	Sardine	<i>Kowala coval</i>
Kokili or Balikokili or Chowli	Anchovy	<i>Anchoviella indica</i>
Poosri	Anchovy	<i>Thrissocles purava</i>
Sahalo or, Sahalia or Balisali	Indian Salmon	<i>Eleutheronema Tetra-dactylum</i>
Borei	Jewfishes, Sciaenidae	<i>Johnius dussumieri</i>
Golari or Landia	..	<i>Otolithes orgenteus</i>
Silamundi or Bettoli	Ditto	<i>Pama pama</i>
Borag	Ditto	<i>Pseudosciaena coiter</i>
Golra or Konia	..	<i>Sciaena russelli</i>

Contd.

Contd.

Dhola Chandee or Ghee Chandee	White pomfret	<i>Pampus dragenteus</i>
Dhala Chandee	Ditto	<i>Pampus Chinensis</i>
Kala Chandee or Mainsia Chandee	Black pomfret	<i>Parastromateus niger</i>
Bahala	Ditto	<i>Formioniger</i>
Kontia or Singada or Gandia	Catfish	<i>Tachysurus arius</i> , <i>Tachysurus calatus</i>
Newa or Bumalo	Bombay Duck	<i>Harpodon nehereus</i>
Garia or Sarbara or Gongatordi	Half-beaks	<i>Hamiramphus</i> <i>gaimardi</i>
Bhokti	Cockup	<i>Lates catcarifer</i>
Chandee	..	<i>Ambassis ambassis</i>
Suduma	..	<i>Lactarius lactarius</i>
Horokura or Kanti	..	<i>Caranx carangus</i>
Parei	..	<i>Scomberoides lysan</i>
Gol Chandee	..	<i>Mene caculatus</i>
Soosta	..	<i>Lufianus lutianus</i>
Jagiri	..	<i>Gerres setifer</i>
Tanka Chandee	Glass fish	<i>Leiognathus equula</i>
Rupapatia or Patia	Ribbon fish	<i>Trichicurus haumela</i>
Koni, Champa	Seer fish	<i>Scomberomorus</i> <i>commersoni</i>
Bijram	Ditto	<i>Scomberomorus</i> <i>guttatus</i>
Sankhamuthia	..	<i>Kurtus indicus</i>
Potpotia	Flat fish	<i>Pseudor-hombus</i> <i>arsius</i>
Dudhapatua	Sole fish	<i>Brachirus orientalis</i>
Kukurajiva	Flat fish	<i>Cynoglossus</i> <i>bilineatus</i>
Bagada	Tiger prawn	<i>Penacus monodon</i>
Chapra	White prawn	<i>Penacus indicus</i>
Khopra	Brown prawn	<i>Metapenaeus</i> <i>brevisonji</i>
Chingudi	Shrimp	<i>Metapenacus spp.</i>

(c) Fish

Local name	Scientific name
1. Khanga and Kabala	.. Mugil cephalus
2. Menjia	.. Mugil speigleri
3. Bagada	.. Penaeus monodon
4. Chapra	.. Penaeus indicus
5. Small prawn	.. Metapenaeus spp.
6. Ilisha	.. Hilsa ilisha
7. Patua	.. Kowala coval
8. Bolangi	.. Chataessus nasus
9. Bhekti	.. Lates calcarifer
10. Khuranti	.. Argyrops spiniper
11. Kundala	.. Etroplus suratensis
12. Ganai	.. Strongylura strongylura
13. Kantia	.. Macrones gulio
14. Boraga	.. Pseudosciaena albida
15. Sahala	.. Eleutheronema tetradactylum
16. Sukura	.. Tricautus brevirostris
17. Jalanga	.. Pangasius pangasius
18. Kabala	.. Mugil cephalus
19. Chungudi	.. Metapenaeus monoceros
20. Kiakudha	.. Mugil corsula

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8. FORESTRY

History of Forest Administration

Forests of India came under some sort of systematic administration from 1863. Orissa forests also came under the notice of the authorities from 1862, although we find from records that a forest division, viz., Orissa Forest Division was created only in 1883. Orissa was then a part of the Lower Provinces of Bengal and Assam. In 1891 Orissa was divided into 2 Forest Divisions, viz., Anugul and Puri. The earliest efforts made in respect of forest plantation appear to be teak plantations raised in parts of Puri Division. The Barunei Teak Plantations were the earliest in this respect and the first plantation was raised in the year 1893.

Regulatory measures except for reserved forests appear to be very little. The local tenants continue to have freedom to use forests for their domestic requirements and also for sale and barter although on a small scale. For such restricted use of forests they used to pay a very nominal fee.

When Orissa was separated from Bengal and became a part of Bihar and Orissa on the 1st April, 1912, the province of Bihar and Orissa had 8 divisions with a total area of 9,591 sq. km. of reserved forests. Out of this the then Orissa had 3 divisions with an area of 3,629 sq. km. of reserved forests. In addition, there were protected forests some of which were demarcated and some not demarcated. There were extensive forest under zamindars and these were not controlled by the Government. The zamindars did not manage forests except to cut down trees as and when they felt the need 'either for extension of agriculture or for sale of forest produce' to augment their own revenues. For the zamindars the forests were considered expendable property, more importance being given for establishment of human habitation. As a matter of fact, many zamindars allowed people to cut down forests for agriculture and after some years when results of successful cultivation were observed they assessed land revenue on the new land. This obviously led to destruction of forests over land which could not sustain permanent agriculture but could have sustained useful forests.

From the 1st April, 1936 when the new province of Orissa was created, Orissa had its own direction in the Forest department. A Conservator of Forests was appointed to look after the forests of Orissa. Efforts were made for the demarcation of more reserved forests.

As on the 1st April, 1936, there were 9 Forest Divisions, viz., Anugul, Puri, Sambalpur, Barapahar, Ghumusur South, Ghumusur North, Baligurha, Phulabani and Paralakhemundi.

The year 1948 brought forests of erstwhile princely states under the control of the Orissa Forest Department. The Mayurbhanj forests, however, came under the administrative control of the Orissa Government in January, 1949. The forests of the princely states known as the Eastern States Agency were under the expert supervision of an expert Forest Advisor, Mr. Mooney and attempts were made to regulate fellings, etc., in some sort of a plan. Vast tracts of forest areas of some of the states were, however, kept outside management of the Forest department with the hope of establishing new villages in these areas. On the other hand there were other states like Bamra where all land not directly tenanted by the people are put under the Forest department of the state for management. There was no law governing forest management during the Durbar period. After merger, the Indian Forest Act, 1927 was extended with effect from the 1st April, 1948 by the Administration of Orissa State's Order, 1948. The Merged States (Laws) Act, 1950 which repealed the Administration of Orissa State's Order, 1948 also extended the Indian Forest Act to all the ex-states for effective management of the forests. The Indian Forest Act was amended by the Orissa Amendment Act 11 of 1954 which inserted section 20-A to the Act. Under this provision of law, any forest land or waste land in the merged territories which had been recognised by the ruler as reserved forests in pursuance of any law, custom, rule, order, working plan or register, etc., immediately before the merger shall be deemed to be reserved forests for the purposes of the Indian Forest Act. All other forests which were recognised in the merged territories as Khesra forest, village forest under the Indian Forest Act. This Indian Forest Act was in force till it was replaced by the Orissa Forest Act, 1972 which came into force with effect from the 14th July, 1972 which contained provisions similar to those of the Indian Forest Act regarding forest reservation, protection, contracts, control, etc. The forests in the ex-princely states were generally well preserved prior to independence except for some over fellings during the World War II.

Some control was imposed on private forest in Orissa by the Orissa Preservation of Private Forests Act, 1947. Already most ex-zamindari forests were very seriously denuded and when the Estate Abolition Act of 1951 was enforced, about 19,942 sq. km. of badly managed ex-zamindari forests came under the Government, although these were physically transferred to the control of Forest department in 1957.

In the earliest period the Anugul forests were worked under the system of selection felling whereby damaged and unsound trees of and above certain sizes were only allowed to be felled and removed. Due to extensive rights and privileges allowed to be exercised by the

tenants in the protected forests, the undemarcated forests practically vanished and demarcated forests were seriously damaged within a few years after independence, before realisation of the extent of damage incurred and its serious repercussions.

With the realisation of the serious consequences of destruction of forests in the catchment of important rivers especially in frequent floods caused in the major rivers of Orissa, attempts are being made to afforest catchment areas of these rivers and special efforts are being made to protect the catchment areas of rivers where multi-purpose or hydro-electric projects are or have been constructed. The Central Government made special allocations for such efforts. Along with other soil conservation measures afforestation was also encouraged. Attempts are also being made to raise various vegetative covers in coastal areas to reduce the affects of blowing sand onto cultivated land or to reduce the affects of cyclonic storms in the coastal areas. Attempts are also being made to bring about vegetative cover on barren hills destroyed due to over-fellings in the past and also areas damaged by shifting cultivation in the hilly areas of Koraput, Phulabani, Ganjam, Kendujhar and Sundargarh districts. Attempts are being made to intensively manage compact areas of potentially valuable forests like the Similipal hills of Mayurbhanj district and also to rejuvenate the denuded forests of Koraput district and raise special plantations of tropical pines and other valuable species in these areas. To man all these regulatory and developmental efforts and other special projects the organisation of the department as in 1981-82 was as follows :—

The Forest organisation is headed by the Chief Conservator of Forests with headquarters at Cuttack. There is one Additional Chief Conservator of Forests who has been entrusted to look after development works like plan and projects, wild life, research, utilisation, resources survey, besides accounts. There are territorial forest circles each managed by a Conservator of Forests with headquarters at Anugul, Brahmapur, Sambalpur and Koraput. Besides there are 6 Special Circles, such as, (1) Development Circle with headquarters at Cuttack, (2) Working Plan Circle with headquarters at Cuttack, (3) Circle for Afforestation in Coastal belt with headquarters at Cuttack, (4) Afforestation Circle with headquarters at Sambalpur, (5) Chief Wild Life Warden with headquarters at Bhubaneshwar and (6) Field Director, Tiger Research with headquarters at Jashipur.

There are 27 Territorial Forest Divisions at Anugul, Athagarh, Dhenkanal, Kendujhar, Baripada, Karanjia, Athamalik, being under Anugul Territorial Circle. Puri, Nayagarh, Phulabani, Baligurha, Ghumusur North, Ghumusur South, Paralakhemundi and Boudh being under

Brahmapur Territorial Circle; Sambalpur, Sundargarh, Banei, Bamra, Deogarh, Redhakhol being under Sambalpur Territorial Circle and Jaypur, Nabarangapur, Kalahandi, Khariel, Balangir and Rayagarha being under Koraput Territorial Circle. Rengali Dam Project Division which has been specially created for taking up clearance of the forest growth of Rengali Dam Reservoir has been kept under Sambalpur Territorial Circle. Similarly Jaypur Bamboo Forest Division created for departmental working of bamboos of Jaypur Division and consolidation division Koraput have been kept under Koraput Territorial Circle. The Conservator of Forests, Development Circle supervises the work of forest utilisation, silviculture, research and forest resources, and Survey and Training of Forest Rangers, Foresters and Forest Guards. The Conservator of Forests, Working Plan Circle supervises preparation of working plans for proper scientific management of the forests. There are Working Plan Divisions under him. The jurisdiction of Conservator of Forests, Afforestation Circle with headquarters at Sambalpur extends over Afforestation Divisions, located in the districts of Sambalpur, Balangir, Koraput and Sundargarh. The Conservator of Forests, Coastal Shelter Belt Afforestation Circle supervises the afforestation work taken up for coastal shelter belt and on inland areas in the districts of Puri, Cuttack, Ganjam, Baleshwar, Mayurbhanj, Kendujhar and Dhenkanal which work is taken up by six Afforestation Divisions. The Chief Wild Life Warden looks after all matters related to wild life in the state. There are 2 Wild Life Conservation Officers under him with headquarters at Bhubaneswar and Chandbali. The Zoological Park, Nandankanan is under the Wild Life Conservation Officer, Bhubaneswar. The Field Director, Similipal Tiger Reserve looks to the protection and increase of tiger population in the Similipal Reserve. He also takes up research on tiger. Besides, the Additional Chief Conservator of Forests, the officers in the office of the Chief Conservator of Forests, Assistant Chief Conservator of Forests of the rank of Deputy Conservator of Forests (I. F. S.), Planning Officer of the rank of Deputy Conservator of Forests (I. F. S.), Senior Administrative Officer (O. A. S.-I), Chief Accounts Officer (O. F. S.-I), Evaluation Officer (Deputy Conservator of Forests), 2 Leave Reserve Officers (Deputy Conservator of Forests), Accounts Officer (O. F. S.-II), Statistical Officer (Assistant Conservator of Forests), P. A. to Chief Conservator of Forests (non-technical), and 10 Section Officers.

Forest Belts and Areas Covered : Character of Forests and the Type of Vegetation found in them

The total forest area of the state stood at 59,963 sq. km. on 1st April, 1981 constituting 38.48 per cent of the total land area.

Out of the total area under forests, the reserved forests were 25,041 sq. km. or 41.67 per cent of the total forest area and the balance forest area comes under the category of demarcated protected forests and forests demarcated for reservation (18,084 sq. km.), undemarcated protected forests (16,822 sq. km.) and ex-zamindari forests, Lakhraj forests, Debottar forests and other unclassified forests (15.13 sq. km.)

The forests of the state can be broadly classified under four main types according to Champion and Seth's revised classification.

Type I: 2B-Northern Tropical Semi-evergreen forests

Type II: 3C-North Indian Tropical Moist Deciduous forests

Type III: 5B-Northern Tropical Dry Deciduous forest

Type IV: 8A-Northern Sub-tropical broad-leaved hill forests

Type I: 2B-Northern Tropical Semi-evergreen forests

Evergreen forests of the state come under this type. These are dense, storeyed high forests. In comparison to the southern sub-type the tendency to gregarious habit is still more marked. Consequently the flora is not so rich and varied; bamboos are often absent from these forests, canes are common along Nallahs.

It is noticed along the east coast. It is also represented in some of the forests of Paralakhemundi, Puri, Nayagarh, Athagarh, Dhenkanal, Baripada, Jaypur, Nabarangapur, Rayagarha, Baligurha and Kalahandi divisions. The important species met with are Arjun (*Terminalia arjuna*), Mango (*Mangifera indica*), Makar-Kendu (*Diospyros embryopteris*), Champa (*Michelia champaca*), Rai (*Dillenia pentagyna*), Ashoka (*Saraca indica*), Manda (*Macaranga peltata*), Nageswar (*Nesua ferrea*) and canes (*calamus*).

The area under this type of forest is about 15 per cent of the total forest area.

Type II: 3C-North Indian Tropical Moist Deciduous Forests

Moist peninsular Sal forests and coastal Sal forests of the State come under this type.

These forests are more extensive and occur in all the divisions mentioned under the previous type in continuation of the semi-evergreen type. They also occur in Kendujhar, Banei and Phulabani divisions of the state in moist valleys. The important species met with are Sal (*Shorea robusta*), Asan (*Terminalia tomentosa*), Bija (*Pterocarpus marsupium*), Daba bamboos (*Bambusa arundinacea*), Kurum (*Adina cordifolia*), Kangada (*Xylia xylocarpa*) and Dhaura

(*Anogeissus latifolia*). This type gives us economically the most valuable forests of the state. The moist Sal in this type is usually of good quality. The area under this type is 35 per cent of the forests of the state.

The tidal or the mangrove forests of the coastal areas found in Kujang and Kanika ex-zamindaries are considered to be a seral sub-type under this type. The characteristic species are Guan (*Excoecaria agallocha*), Hental (*Phoeni paludosa*), Rai (*Dillenia pentagyna*), Herkanchi (*Acanthu silicifolius*), Goriops, Sonnaratis, Sundari (*Horitica minor*) Bani (*Avicannia alba*), etc.

This type has an area of 5 per cent of the total forests of Orissa.

Type III : 5B-Northern Tropical Dry Deciduous Forests

This forest type is closely similar in appearance with its southern counterpart. The difference is noticed by more broken canopy and slightly shorter trees.

The type of forest occurs further west where the conditions obtained are appreciably drier. Natural occurrence of teak with some of its usual associates is the characteristic feature though its incidence is not very extensive. This type is found in parts of Kalahandi, Balangir, Sambalpur, Khariar and Deogarh Divisions. The main species met with are Sal (*Shorea robusta*), Asan (*Terminalia tomentosa*), Dhaura (*Anogeissus latifolia*), Kendu (*Diospyros melanoxylon*), Karada (*Helicteres isora*), Kurum (*Adina cordifolia*), Salia Bamboo (*Dendrocalamus strictus*), etc. The Sal, Asan, etc., are found in this type of forests of Khariar, Kalahandi, Balangir, Rayagarha and Jaypur Divisions. The total area under this type is 35 per cent of the total forest of the state.

Type IV : 8A-Southern Sub-tropical broad-leaved hill Forests

This forest type occurs on higher hills with higher rainfall, but 1,000—1,300 mts. altitude. Hilly tract and rolling topography are ideal for this occurrence on a variety of soils. The vegetation consists of a mixture of tropical wet evergreen and sub-tropical forests, the former predominating.

The area of this type is less than 10 per cent of the total forest.

Subsidiary and Seral types

In addition to the above main types there exist various subsidiary types and seral types though of a limited occurrence due to various edaphic, biotic and local climatic factors. The chief among them are the tidal forests briefly mentioned earlier and the coastal Sal type occurring in Ganjam and Puri (Banpur Sal) districts.

The state is the southern-most limit of Sal. Sal completely disappears from near Malkangiri in Koraput and the Motu-Malkangiri area though these areas are rich in valuable miscellaneous species. It is also the meeting place of Sal and teak. Natural teak occurs in Kalahandi, Balangir, Koraput and Khariar. More teak occurs side by side with Sal.

Sal (*Shorea robusta*)

The forests yield a variety of produce of which timber and firewood are considered as major produce. The most important timber in the state is Sal (*Shorea robusta*) and this constitutes more than 75 per cent of the total timber production in the state. The wood is brown, hard, very durable and is practically immune from attack by white ants. It is used for buildings, bridge construction, railway sleepers, pit props in coal fields, etc.

Teak (*Tectona grandis*)

It occurs naturally in Balangir, Kalahandi, Koraput and Khariar areas. The quality according to growth rate is poor. Plantations in Banpur *mala* show, however, much better growth. Raigoda and other plantations in Anugul also show high quality as regards growth rate.

Piasal (*Pterocarpus marsupium*)

This is another useful timber tree occurring scattered throughout the state. It is used for door and window frames, furniture and agricultural implements and is as valuable as Sal. Asan (*Terminalia tomentosa*) is another important timber tree which occurs all over the state's forests. It is used in building construction and for agricultural implements.

Bandhan (*Ougeinia dalbergioides*)

It is a small moderate size tree, timber of which is in great demand for cart wheels and axles. The timber is very hard and is used for furniture also, but the quantity available is not large. Haldu or Kurum (*Adina cordifolia*) tree occurs scattered in the state's forests. The timber is used for furniture, bobbins and toys.

Gambhari (*Gmelina arborea*)

It is found scattered all over the state's forests. The timber is utilised for furniture and planking. This is light and whitish and is used as a substitute for teak for light furniture.

Sisoo (*Dalbergia latifolia*)

It is another important timber species of the state and occurs mostly in dry localities. The timber is usually utilised for manufacture of furniture and for veneering. Unfortunately the quantity available is not large.

Other important tree species occurring in the state are Jamu (*Eugenia jambolana*), Khair (*Acacia catechu*), Dhaura (*Anogeissus latifolia*), Kusum (*Schleichera trijuga*), Champa (*Michelia champaca*), etc.

The annual quantity of timber removed from the state forests on an average is about 4 lakh cubic metres.

The annual quantity of firewood removed from the state forests is on the average 6 lakh cubic metres.

Minor Forest Produce

The following are some of the important minor forest produce of the state:—

Bamboo

There are two main species of bamboos occurring in the forests. These are Daba bamboo (*Bambusa arundinacea*) and Salia bamboo (*Dendracalamus strictus*). Daba bamboos are worked on a selection system with a four year cutting cycle and Salia bamboos on a 10 to 12 year rotation or clear felling system. The main use of bamboos besides domestic use, is the manufacture of paper pulp. Most of the bamboo forests of the state have been leased out to paper mills on a long term basis. The bamboo forests of Jaypur Division only are being worked out departmentally from 1974-75. Bamboo coupes of some divisions not leased out to paper mills are allotted to Orissa Forest Corporation on fixed royalty basis. The revenue realised from bamboos in 1980-81 was about Rs. 2.92 crores.

Kendu leaf (*Diospyros melanoxylon*)

Kendu leaf generally known as 'bidi leaves' is used as wrapper for Bidi which is a popular and common smoke among the people of India and adjoining countries. This is another important minor forest produce. The leaves are collected from Kendu plant technically known as *Diospyros melanoxylon*. It grows abundantly in the forests and uplands of Orissa, Madhya Pradesh, Bihar, Maharashtra and Andhra Pradesh. The collection of leaves in the country is about 8 lakh tonnes of which Orissa contributes 16 to 17 per cent. About 90 to 95 per cent of the production of the state is produced in the western districts, i.e., Balangir, Sundargarh, Sambalpur, Kalahandi, Phulabani and Dhenkanal. Quality of leaves of Balangir and Sambalpur districts is considered to be the best and are priced most in the market.

In Orissa Kendu leaf trade was monopolised by a few merchants who were holding the lease on long or short term basis with nominal royalty. They not only introduced this trade in the state but developed and perfected its technique. After independence it played a dominant role in the state economy. Ultimately the Kendu leaf trade was nationalised with effect from January 1973 under the Orissa Kendu Leaves (control of trade) Act, 1961. It was decided by Government that the Kendu leaf trade will be operated jointly by the State Government and the Orissa Forest Corporation. Collection, processing, bagging and storing of Kendu leaves will be done by the Forest Department and the Orissa Forest Corporation Ltd., will do the marketing of the processed leaves on behalf of the State Government. A post of Additional Chief Conservator of Forests (Kendu leaf) was created who is the head of the department and the controlling officer exclusively for the Kendu leaves nationalisation scheme in the Forest Department. He is assisted by three Conservator of Forests, one Assistant C.C.F., 18 Divisional Forest Officers, 40 Assistant Conservator of Forests, 153 Forest Rangers, 748 Foresters and 642 Forest Guards and other miscellaneous staffs. Besides, about 18,600 seasonal staff, checkers, head checkers, chowkidars, etc., are employed every year during working session for a period of 2 to 11 months according to necessity. Kendu leaves from Orissa are exported to Shri Lanka and Pakistan enabling the country to earn valuable foreign exchange.

Under the nationalisation scheme State Government do not spend anything from the state exchequer for production and marketing of the Kendu leaves. Although the expenditure incurred for the Addl. C.C.F.(K.L.) and his staff for operating the scheme is exhibited in the state budget the same is re-imbursed by the Orissa Forest Corporation Limited out of the sale proceeds of Kendu leaves. Besides 10 per cent of the entire capital expenditure (i.e., vehicles, machineries and buildings) is also repaid by the Orissa Forest Corporation Ltd., every year. Before nationalisation the government revenue from Kendu leaf scheme by way of royalty, etc., was about Rs. 2 crores and after nationalisation this royalty varied from 2.20 crores in 1977 to 4.99 crores in 1979, the average gross receipt in 1980-81 being 8.88 crores.

Sal seed

Sal seed is also another important minor forest produce. It is being collected in important Sal forest areas of the state. According to the industrial policy resolution of the state, the lease of this important minor forest produce was settled on long term lease with local industries having solvent extraction plants at the rate of royalty

fixed by the Government. But its collection, sale, etc., have since been nationalised under the Orissa Forest Produce (Control of Trade) Act, 1981 from the year 1983. It is a highly fluctuating crop. The production of Sal seed varies from year to year. In a good seed year, which occurred in 1977 the production was about 62,000 tonnes, but in a bad year, this was 15,000 tonnes during 1978.

The other minor forest produces are lac, tasar, cocoon, myrobalan, Sabai grass, broom grass, Patalgaruda, Mahua flower and seed, tamarind, Sunari bark, Genduli gum, resin, arrowroot, honey, wax, thatching grass, fodder grass, ivory, etc.

That, forest plays a vital and important role in the economy and ecology not only of the state but also of the country as a whole needs no reiteration. Until recently there was no consciousness either on the part of the administration or on the part of the society that forests have an intrinsic right to land. Forestry as such was permitted on residual land not required for any other purpose. The mischief caused by such improvidence has been realised, somewhat lately. No doubt a National Forest Policy was first evolved as early as in 1894. Even this policy envisaged regulation of rights and the restriction on the privileges of the user in the forest by the neighbouring population. Though it envisaged management of forests of inferior species in the interest of the local population, it recommended to Government to take such steps to see that the "user is not exercised so as to annihilate its subject" and the people are protected against their own improvidence". Besides giving contracts to unscrupulous contractors for extraction of timber, a very liberal policy regarding giving rights and concessions to tenants was also followed. It is really a matter of concern that the same rights and concessions are also being allowed even today except that the schedule of rates have been slightly revised upwards by the Forest Department with effect from the 14th November, 1977. To prevent further depletion of forest materials, a Government order was issued on the 18th January, 1980 to abolish the Nistar cess keeping in view the recommendations of various forest expert committees, such as, the Partially Excluded Area Committee, the Forest Enquiry Committee and the National Commission on Agriculture. The concessions given in several areas to take forest material either free of charge or on half or 1/4th of the schedule of rates, as the case may be, was simultaneously withdrawn with effect from the 1st April, 1980. All tenants were to pay the full schedule of rates which was itself a great concession. But this order was kept in abeyance due to public pressure. So the wish expressed in the National Forest Policy of 1894 that "people should be

protected against their own improvidence and that the user should not be exercised so as to annihilate its subject" still remains a distant goal.

Owing to far-reaching developments having taken place in the economic and political life of the country, the National Forest Policy was reoriented in 1952 keeping the fundamental concepts underlying the existing Forest Policy in tact. It suggested 4 classifications of forests on a functional basis, i.e., Protection forests (reserved and protected forests), National forests (to be maintained and managed to meet national needs like defence, communication, industry, etc.), Village forests (to meet local needs) and Tree-lands (privately owned). But the methods by which the conflicting needs were to be reconciled were not spelt out.

To quote from the 1952 Forest Policy, "The fact must be realised that the country as a whole has a vast stake in the conservation of all forests, irrespective of their functions and ownership and therefore all of them should be administered from the point of view of national well-being. While, therefore, the needs of the local population must be met to a reasonable extent, national interests should not be sacrificed because they are not directly discernible, nor should the rights and interests of the future generations be subordinated to the improvidence of the present generation". It, therefore, discarded the two widely prevalent considerations, "plausible no doubt, at first sight, but if given undue weight to destruction of national well-being in the long run, i.e.,

- (1) Neighbouring areas are entitled to a prior claim over a forest and its produce, and
- (2) Agricultural requirement has a preferential claim over forest land".

It recommended 60 per cent of the geographical area of a mountainous tract and 20 per cent of plains are to be under perpetual legal cover (i.e. reserved forests).

"Forest" was included in the "State List" in the Constitution of India, 1950. So the National Forest Policy enunciated in 1952 could not be implemented. Owing to its national importance it was included in the "Concurrent List" by the 42nd Constitution Amendment Act, 1976, with effect from the 3rd January, 1977.

In Orissa, forests were so extensive in the beginning that the need to protect them was hardly accepted psychologically either by the administration or by the people. Villagers were freely allowed to take their requirement of forest produce, not only for their

domestic needs but also for trade purpose on a small or nominal fee. Contractors were allowed to fell and extract trees, payment for which was made on royalty per tree (varying according to size). Nominal working schemes were made to regulate number of trees to be extracted per year from particular areas. The first working scheme for Puri division was made for 10 years in 1895 and for Anugul division for 15 years from 1908 to 1923. Prior to these schemes fellings in Anugul was regulated by some sort of selection of dead, dying or over-sized trees. This was soon found to be destructive to the forest and so working plans were made to regulate exploitation of the forest to maintain sustained yields and to improve existing stock and regenerate forests where nature was not augmenting valuable stock. Plantations of teak was raised but mostly on individual efforts of forest officers rather than as a planned effort guided and directed centrally.

Rights were freely admitted in protected forests and some protected forests were demarcated and supply to tenants was regulated to some extent. But extensive areas of protected forests were left undemarcated. These undemarcated protected forests were ultimately to be taken up for extension of agriculture and with pressure of population, most of these forests have vanished.

After the introduction of the Government of India Act, 1935, and after merger of the ex-states in the parent province, when popular ministries took charges of administration one of their earliest enactments was to give right to trees in tenanted lands to the tenants. This was then considered to be a desirable move as landlords had been harassing tenants over the use of trees standing in tenanted lands. But as necessary precautionary measures had not been taken, unscrupulous people took advantage of this law and illegally removed trees from Government lands standing outside reserved forests and claimed that they had removed these trees from tenanted lands. Trees like Kuchila (*Strychnos nuxvomica*) and many other trees existing in the coastal districts on Government lands vanished very quickly as a result of the misuse of this enactment.

The private forests of zamindars were managed mainly for the purpose of revenue when needed for any purpose, and most zamindari forests were depleted. There were a few zamindars like Paralakhemundi who took very early measures to protect and improve their forests by borrowing trained officers from Government to manage their forests and ultimately entrusting their forests to Government management, but the vast majority did nothing to preserve their forests. In 1947, Preservation of Private Forest Act was passed which was effective to some extent to prevent wholesale destruction of private forests. After passing of the

Orissa Estates Abolition Act, 1951, zamindari forests came under some sort of protection, but Forest Department got control over them in 1957. All the forests of Orissa are still not demarcated for reservation. According to statistics maintained by the Forest Department, only 41.67 per cent of the forests have been declared reserved and the remaining 58.23 per cent are still under "reserved lands", "forests demarcated for reservation", "protected lands", "demarcated and undemarcated protected forests", "Debottar forests", "unclassified forests", etc., or in other words, a major portion of the forests is still to get full measure of legal protection as is available to "reserved forests". But, N. R. S. A. (National Remote Sensing Agency) reports that not more than 25.31 per cent of the total geographical area of the state is now under forests and this gross area included "open forest" which occupies 30 per cent of this gross area. Computing effective area, Orissa has not more than 20.63 per cent of the total land surface under forest growth. A study undertaken by the N. R. S. A. in the periphery area of some major projects of Orissa reveals definite degradation of forests in and around the periphery of reservoirs.

Name of the reservoir	Area in sq. km. without forest vegetation
Hirakud	39
Machhkund	61
Rengali	88
Salandi	64

The following are some of the endangered plant species of Orissa :

- (1) *Entada phaseoloides merrill*
- (2) *Coccoloba spermum religiosum* (linn.) Alston (Bixaceae), Oriya name Ganiari
- (3) *Acacia catechu wild* (Mimosaceae)
- (4) *Alphonsea ventricosa* (Annonaceae)
- (5) *Albizia odoratissima benth* (Mimosaceae), Oriya name Tinia
- (6) *Calamus guruba ham* (Palmae), Oriya name Kuntabat
- (7) *Rawolfia serpentina benth* (Apocynaceae), Oriya name Patalagaruda
- (8) *Gloriosa superba linn.* (Liliaceae)
- (9) *Heritiera minar rexf* (Sterculiaceae) Oriya name Sundar
- (10) *Hiptage benghalensis* (Malphigiaceae)

Orissa deforested extensive forest land for rehabilitation of displaced persons from various power and irrigation reservoirs like Hirakud, Rengali, etc., for the East Bengal and Tibetan refugees, for various industrial projects, etc. Extensive forest land

were also leased out for extension of agriculture and implementation of the slogan of the "land to landless." Extensive encroachments over valuable forest lands in several districts like Koraput, Sambalpur and Mayurbhanj were regularised by issue of executive orders.

After such huge damage to environment and ecology a new sense of awareness has dawned on the Government and the public to preserve the residual forests, to improve the degraded forests and take up plantations on a huge scale under several state, central, centrally sponsored and internationally aided afforestation schemes. In fact since the beginning of the 5th Plan period, social forestry schemes have been taken up in a big way following the all-India policy recommended by the National Commission on Agriculture. The programme under social forestry included mixed plantation, rehabilitation of degraded forests, rural fuel wood plantation, coastal shelter belt plantation, farm forestry, etc. One of the components of the new 20-point economic programme of the Prime Minister is to "pursue vigorously programmes of afforestation, social and farm forestry". Prime Minister's declaration of bringing five million hectares under afforestation every year has been most timely and appropriate, although its implementation is fraught with insurmountable difficulties. While according clearance of any river valley projects or establishing industries or giving mining leases in forest areas provision of funds for compensatory afforestation is being insisted upon as a part of the project cost.

The following is the achievement of the Forest department in various afforestation schemes under the central, centrally sponsored and state sectors upto the end of 6th Plan period in hectares.

Afforestation scheme	Up to the 5th Plan period	During 6th Plan	Total
(1)	(2)	(3)	(4)
1. Economic plantation	67,236	16,090	83,326
2. Rehabilitation of degraded forests	12,035	54,470	66,505
3. Farm forestry (for rural poor)	777	68	845
4. Afforestation for soil conservation in coastal sand-dunes	9,028	..	9,028
5. Plantation of quick growing species	47,260	11,016	58,276

Afforestation scheme	Up to the 5th Plan period	During 6th Plan	Total
(1)	(2)	(3)	(4)
6. Afforestation in Hirakud and Machhakund catchments	37,750	16,100	53,850
7. Development of minor forest produce	2,627	1,022	3,649
8. Afforestation in coastal belt	12,027	6,758	18,785
9. Compensatory afforestation	11,000	4,575	15,575
10. Cashew development	2,000	..	2,000
11. Mixed plantation	10,605	34,873	45,478
12. Reforestation of degraded forests	14,566	6,439	21,005
13. Plantation in Podu ravaged areas (ITDP)	1,348	..	1,348
14. Special Afforestation Rehabilitation schemes (drought and cyclone/ tornado affected areas)	1,642	21,692	23,334
15. Plantation of mixed fodder and fuel wood species (grant-in-aid to Orissa Agro Industries under BAIF scheme)	703	1,418	2,121
16. I. R. D. P.	1,607	1,459	3,066
17. D. P. A. P. including rehabilitation of degraded forests	12,001	14,102	26,103
18. I. T. D. P./T. D. A.	2,749	432	3,181
19. Grain for work programme of State Plan	296	..	296
Grand total ..	2,47,257	1,90,514	4,37,771

Besides, some special afforestation schemes like Prime Minister's massive plantation programmes in community lands, plantations under N.R.E.P., R.L.E.G.P., and E.R.R.P. schemes were taken up in the 6th plan under which plantation in 21,201 hectares were done. In addition, 2,000 rkm. (Row kilometres) of avenue plantations were done in the Fifth Plan and 1985 rkm. in the Sixth Plan. In addition, 45.39 and 501.07 lakhs of seedlings were distributed free in 5th and 6th plan periods respectively among persons interested in tree planting in their own private lands and among educational and other institutions under farm forestry scheme. There has yet been no survey regarding the rate of survival of trees in these plantation schemes. Due to inadequate arrangements for watering in their early stages, and protection from ravages of freely wandering cattle and goats in forests, wastelands and roadside lands, survival rate of the trees appears to be very poor.

A new social forestry project with Swedish assistance (SIDA) is being implemented in 9 out of 13 districts of the state at a total outlay of Rs.23.00 crores for the period from 1983-84 to 1987-88. During the sixth plan period about 39 crores of trees are reported to have been planted under various schemes. To prevent further deforestation, the Forest (Conservation) Act, 1980 has been passed by the Central Legislature, prohibiting use of forest lands for non-forestry purpose and dereservation of reserved forests without prior approval of the Government of India.

In India there was concern for ecology from the earliest times. Isha Upanishad says, "This universe is the creation of a superior power meant for the benefit of all his creations. Individual species must, therefore, learn to enjoy the benefits by forming a part of the system in close relation with other species. Let not any one species encroach upon other's rights". The world's first recorded conservation measures especially for wild life was taken up in India during the 3rd century B. C. in the days of emperor Asoka. He set up hospitals and reserves for wild animals and birds. All the major religions which took birth in India—Hinduism, Buddhism, Jainism, etc., have enshrined this philosophy of life. While launching the world conservation strategy in India on the 6th March, 1980, the Prime Minister, Smt. Indira Gandhi emphasised this point. The interest and emphasis on world life conservation is not a sentimental one but the rediscovery of a truth well-known to the ages. All forms of life (human, animal and plant) are so closely interlinked that disturbance in one gives place to imbalance in the other. That is why there is now so much

worldwide emphasis and concern for ecology—a science of inter-relationship between the living and the non-living components of environment. In a perfect eco-system these components exist in a systematic delicate balance, which can be disrupted by human interference. If the damage is temporary, there is enough resilience in the life support system to restore itself. But if it is continuous and appreciable the life support system does not return to its original situation and leaves scars behind.

Despite its rich tradition and socio-religious background the country has witnessed serious depletion of the biological heritage. From 297 millions in 1931, the human population in India rose to 684 millions in 1981, an increase of 145 per cent. Reasons for the depletion of forests and wild life can justifiably be traced to this sudden and unprecedented explosion in human population.

Game laws and measures for the preservation of wild life

Orissa once fabulously rich in its wide distribution of luxuriant forests, abounded in thick population of wild life. Shooting then was considered a great sport and many of the ex-states have still reminiscences of it in the form of Akhandaparidhi or unlimited shooting over a period. The early forest officers who were conscious that this sport might one day act adversely on the population of our rich wild life framed the first shooting rules in the year 1938, named the "Orissa Reserved Forest Shooting Rules". The ex-rulers and zamindars were also making similar rules but their effective use for the cause of wild life protection was not noticeable.

The necessity for the preservation of wild life was felt as back as 1888. Rules for hunting, shooting and fishing were then framed on all India basis.

Shooting (for sport) without a licence was prohibited. Close season from April to September of the year was defined during which no animal could be shot for sport or collection of trophies. The Lt. Governor of Bengal had shooting rules framed in the year 1907 for Anugul and Puri districts even in protected forests. The rules prohibited shooting of bison, hornless male deer, deer with horn in velvet and females of all deer species.

The Elephant Preservation Act came in 1879 and Wild Birds and Animals Protection Act came in 1912. Rules were made thereunder but the forests being a vast tract, effective execution of the Act and rules was not adequate in the absence of staff, vehicle and publicity. The result was as usual disastrous.

Pressure on forests from industry, agriculture, and hydel and irrigation projects gradually increased and the habitat of the wild animals was greatly devastated. The ecology was disturbed. For want of habitat and natural food of the animals, agricultural crop was damaged. Farmers took to killing them. Poisoning of animals through pesticides and insecticides became an easy way of killing. This necessitated the creation of sanctuaries and National Parks to be kept as reserves to protect animals in their natural habitat and scrupulously protect the near extinct animals, birds and reptiles of the state. In 1930, some sanctuaries such as Badrama, Raigoda, Chandaika, Balukhand (for black buck) were created. The Forest Department in the State Government with their meagre resources have tried their utmost to safeguard the invaluable voiceless denizens of the forest by creating anti-poaching check-gates on the vulnerable roads and by providing rewards to the staff who detect forest offences against wild life.

The State Wild Life Advisory Board consisting of officials and non-officials and the Minister, Forest, as Chairman, has been constituted and the Board is actively functioning.

Everything said and done, the fact remains that since the habitat (home of animals) has been greatly damaged, the homeless wild life have been depleted. In the recent past, the wild life protection has received great encouragement all the world over. The world wild life fund has assisted the project tiger which has done some spectacularly good work in this state. The story of "Khairee", the pet of Similipal Tiger Project, is well-known.

The Wild Life Protection Act, 1972 and the Wild Life Protection Rules, 1974 have come into strict force. The posts of Chief Wild Life Warden and Wardens have come into being. Separate staffs are being employed and the scope of the Act and Rules being very wide, with the added strength of publicity and response from the mass, the forest officers are at work to save whatever is left of wild life and to revive through research and hard work, the animals, reptiles and birds which are at the point of extinction. Also exchange of animals with other states forms a part of this work.

Wild life Management

A separate wild life wing under the Chief Wild Life Warden to look after all matters related to wild life in the state has been created since 1977. The Chief Wild Life Warden has two Wild Life Conservation Officers under him stationed at Bhubaneshwar and Chandbali. The Nandankanan Zoological park is under the

Wild Life Conservation Officer, Bhubaneshwar. The Wild Life Conservation Office, Chandbali has the Bhitarkanika Sanctuary and the Satkosia Gorge Sanctuary under him. All the territorial Divisional Forest Officers work as ex-officio Wild Life Wardens in their respective divisions. Wild Life in Orissa is as varied as its forests. The important wild life found in Orissa are tigers, panthers, elephants, Indian Gaur, Cheetal, Sambar, Nilgai, wild buffalo, bison, wild bear, spotted deer, barking deer, black bear, blackbucks, etc. A large variety of birds and reptiles are also found.

There are eighteen wild life sanctuaries in Orissa. They are Satkosia Gorge, Bhitarkanika, Chilika, Nandankanan, Similipal, Kuldiha, Karlapat, Saptasajya, Kapilas, Ushakothi, Khalasuni, Balukhand, Chandaka, Debrigarh, Hadgarh, Mahanadi and Baisipally, and Padmatola and Raigoda.

The Satkosia Gorge sanctuary with an area of 796 sq.km. was created in 1976 with portions from the districts of Puri, Cuttack, Dhenkanal and Phulabani. The best location within the sanctuary is Tikarparha, a small village, beside the panoramic Satkosia gorge of the river Mahanadi, 58 km. from Anugul. The sanctuary is famous for its rich and varied wild life mainly the Gharial and Muggar crocodiles, tiger, elephant, leopard, deer and hornbills. In the Gharial Research and Conservation Unit located at Tikarparha, eggs collected from the wild Ghambal sanctuary from Madhya Pradesh, and from Nepal are hatched in a hatchery. An interesting feature of this sanctuary is that in January, 1979 a wild female Muggar "Basanti" came from river Mahanadi to the project pools in quest of a male where five Muggars (one male and four females) were being reared since 1975. She however, escaped to the wild in August 1980 but returned to the project pools in March, 1981. She laid 12 eggs in the enclosure which hatched out five hatchlings in June 1981 which are being reared.

The Bhitarkanika sanctuary covering 176 sq.km. area, was created in the Cuttack district in 1975. This sanctuary is famous for its salt-water crocodiles, deer, snakes and birds. Some of the biggest salt-water crocodiles of the world are living in this sanctuary.

The Chilika sanctuary covers the Chilika, the largest estuarine lake of its kind along the India coast and it is famous for its fish and crustacean fauna. During winter it is a paradise of migratory birds, ducks coming from Siberia and other northern regions.

The Nandankanan sanctuary is the only one of its kind to have a Biological park within it. The Biological park has a spectacular scenic beauty with a Botanical garden and a Zoological park with a beautiful lake in between. Several interesting animals including a white tiger, a male rhino, a pair of hullock gibbons were acquired for Nandankanan in 1980. On the 8th January, 1980, Ganga, a normal tigress which was sired by Deepak, another normal tiger gave birth to these white tiger cubs; one male and two females. This is a historic day as a new breed of white tigers from normal tiger parentage have been born. This is not all. Nandankanan has created yet another record. An adult male Gharial was presented to Nandankanan by Frankfurt Zoo for breeding. This Gharial has successfully mated with the two female Gharials in the captive breeding pool at Nandankanan and we have successful hatching from the clutch of eggs. This is first world record of Gharials breeding in captivity. The Biological park had about 6.5 lakh visitors during 1979-80. The area is over 500 hectares which includes a lake of over 50 hectares. The lake is used for pleasure boats of various kinds. A lion safari park is a new addition to Nandankanan sanctuary.

Wild life Census

A census of tigers and elephants was carried out in the state during 1979. There were 173 tigers and 2044 elephants in the state.

The blackbucks of Balipadar in Ghumusur South Division (Ganjam district) is an ideal example where wild life is being protected by local villagers. A census during 1973 showed a remarkable population on 573 blackbucks in the villages but the population went down to 485 in April, 1980. Special protection staff of the cadres of Range Officers and Guards have been posted by the wild life wing in different parts of the state. They look after and supervise the wild life interests in the state.

Wild life Project

Three important schemes have been taken up in the state for wild life management and conservation. These are the project tiger, crocodile schemes and sea-turtle conservation scheme.

The Similipal Tiger Project was started in 1973 with the assistance from Government of India and World Wild Life Fund. The project has the following main objectives:—

1. To ensure the perpetuation of tiger population.

2. To assess, create and maintain the optimal habitat conditions for the tigers.
3. To co-ordinate forestry and wild life conservation.
4. To maintain a core area which will be free from all interference.

The project has been making good progress and the population of tiger in the area has increased steeply. As per the recent Census 65 tigers are there in the Similipal Tiger Reserve.

The Crocodile Scheme with the assistance from Government of India, F. A. O. and U. N. D. P was started in 1975 and is still in operation under four sub-schemes. They are the Research and Conservation Units of Tikarparha for Gharial, Bhattar Kanika for the salt-water crocodile, Ramtirtha (near Jashipur in Mayurbhanj district) for Muggar and the captive breeding centre at Nandankanan. The Reserch and Conservation Units operate on a four-phased plan, namely, collection of naturally laid eggs, incubation of the eggs in hatchery conditions, rearing the young in captivity and release of the young of suitable size in natural habitats. Under such operations 107 Gharial youngs have been released into the Mahanadi and 123 salt-water youngs have been released into the Bhattar Kanika Sanctuary.

We have at present the following stock of crocodiles at different centres.

Tikarparha	Gharial	63
	Muggar	11
Dangmal	Salt-water crocodile	312
Ramtirtha	Muggar	22
Nandankanan	Gharial	7
	Muggar	5
	Salt-water crocodile	4

The Sea-turtle Scheme is located at Gahirmatha in the Bhattar Kanika Sanctuary. An enumeration during 1976 indicated that this coast holds the largest sea-turtle roockery in the world. Research work and conservation measures are in progress under this scheme. Future commercial utilisation of the sea-turtle resource is envisaged.

Importance of Forestry in the Economy of the State

Vast tracts of the State of Orissa are hilly. All these hills are, however, not under vegetative cover for various reasons. The most important of these reasons are—

1. Past denudation in the populated areas by unrestricted felling and grazing by cattle especially goats.
2. Shifting cultivation over at least 1/5th of the whole state.
3. Lack of management in the past zamindari forests and also in some of the ex-state forests.
4. Allowing excessive use of forest by the people in the neighbourhoods without considering the capacity of such forests to support the same.

Vast areas which have thus been denuded of forest but are suitable for permanent vegetation have to be rehabilitated for the safety of agriculture in the foot hills, to reduce erosion of soil in the catchment of rivers; for regulating proper flow of water in the rivers and thus preventing flood and generally for the improvement of the climate and inducing higher rainfall to prevent dry conditions over vast areas. In addition to these preventive or protective measures, forests are also a vast source of revenue to the government and a source of employment to the people. In 1983-84, 54.94 crores was the total forest revenue against 783 crores of the state revenue in that year. This was 7.65 per cent of the total revenue of the state. By proper management and silvicultural practices much more forest revenue should come to state coffers.

Orissa has three paper mills at Rayagarha, Bijaarajagar and Choudwar, mainly fed by the bamboos obtained from the Orissa forests. Solvent extraction plants have been set up for extraction of oil mostly based on Sal seeds at Rairangpur, Sasan, Kesinga, Ambeguda, Bhadrak, Sambalpur and Brahmapur. Similarly Kendu leaf which yields 8 to 10 crores of revenue to the state exchequer also represents a source of employment to a very large number of otherwise unemployed labour, and also in Bidi-making industries in the state and outside. Besides, there are about 686 saw mills in the state (out of which 517 have been duly licensed as on the 1st October, 1982) which employ about 7,000 persons daily.

Measures undertaken for scientific exploitation of forest

The most important measures undertaken for scientific exploitation of forest is the preparation of proper Working Plan. Individual trees put on a certain rate of growth. Forests which are collection of trees have certain rates of growth. This differs according to

the conditions of the soil, its slope, moisture retentivity of the soil, local rainfall and all other factors necessary to promote or retard the plant's growth. Under natural conditions this rate of growth is slow but by proper management this growth can be increased to a great extent. The basis of scientific management is to try to obtain the optimum rate of growth from the forest by proper management and extract from the forest the equivalent of the annual growth. This objective is achieved through a plan of work which is called Working Plan by foresters. In Orissa, Working Plan was introduced quite at an early period. These Working Plans were prepared for 20 years at a time but continuously revised at the interval of every 10 years after assessing the result of the performance in the first years of working. Working schemes which are only a method of regulating fellings was to see that the forest does not deteriorate and what would have been lost otherwise is extracted to make some revenue. This policy of working according to approved schemes where regular plan could not be prepared was also introduced into all private and ex-state forests in the early period. Now almost all of our forests are covered by regular Working Plans.

A major portion of income from forest produce is timber and fire-wood. While fire-wood is taken away mostly by tenants in exercise of their nistar right, the timber of the incremental yield of the forest is taken by contractors mostly through auction sale. The system of auction through contractors has proved ruinous to forest wealth. The National Commission on Agriculture recommended working of forest coupes through Labour Co-operatives or through State Forest Corporations. After formation of the Orissa Forest Corporation in the year 1962, some forest coupes were leased out to the Corporation, but bulk of the coupes were given to the contractors on the basis of the highest bids. As this also proved detrimental to forest wealth, the system of auction through contractors was abolished and most of the forest coupes were given on negotiated royalty basis to the Orissa Forest Corporation with effect from the year 1975. It has since been decided by Government that all the forest coupes of Orissa will be worked out by the Orissa Forest Corporation or by the Similipal Forest Development Corporation which are State Government undertakings and the contractors will be completely eliminated from the forest coupes.

Most of the forest contractors were taking forest coupes mostly to provide captive raw material for their saw mills, which provided natural outlet for timbers illicitly removed from forests. This led to huge pilferage from the forest sometimes with the connivance of the forest staffs. Raids conducted in some

neighbouring saw mills showed that saw mill owners could not account for all the timber stored in their mill premises. Therefore the Orissa Saw Pit and Saw Mill (Control) Rules, 1980 framed under Section 45 of the Orissa Forest Act were promulgated from the 24th March, 1980 to enforce compulsory licensing of the saw mills by the Divisional Forest Officer to enable him to inspect the saw mills to find out unaccounted timber in their mills. This has resulted in stoppage of illicit felling and trade to a great extent.

To check large scale pilferage of timber and other forest produces the anti-smuggling wing of the Vigilance Department was strengthened in the year 1980 with the induction of both forest and police officers who were armed with weapons and necessary legal powers along with vehicles to check organised smuggling of timber which has yielded dividends.

Forest Training School, Research Centres, Training of Forest Rangers

A Forest Rangers' College has been opened at Anugul to train newly recruited Forest Rangers from November, 1979. The course is of one year duration and the capacity of this college is 40 trainees per year. Trainees from Orissa and Madhya Pradesh are undergoing training in this college at present.

Training of Foresters

In 1927 a Forester Training School was established at Champua in the ex-state of Kendujhar. The school was named as "Orissa State's Forest School". Initially it started with 12 or 13 students. Subsequently students from Bihar and Orissa were trained. With the formation of the Eastern States Agency in 1931 the nomenclature of the school was changed to Eastern States Forest School. The school gradually expanded and by 1945 it had capacity to train 30 Foresters. The name of the school has subsequently been changed to Nicholson Forest School. The Divisional Forest Officer, Kendujhar, is the Director of the school.

A second Forester School was established at Anugul during 1963-64 with a capacity to train 40 Foresters per year. This school was abolished in October, 1979 to accommodate the Rangers' College. A new Foresters' School with the same capacity was opened at Chitrakonda in Koraput district to train Foresters, especially tribal students out of funds made available by Harijan and Tribal Welfare Department. Subsequently the school has been shifted to Jaypur.

Training of Forest Guards

A Forest Guard Training School named as Mooney Forest Guard Training School was opened at Anugul on 1st February, 1961. This institution trains in-service Forest Guards. The duration of training is 6 months. The capacity of this school is 120.

9. FLOODS, FAMINES, DROUGHTS AND CYCLONES

Introduction

Orissa has been subjected regularly to natural calamities, like flood, famine, drought and less frequently to cyclone, over centuries. But the magnitude of these and the necessity of providing succour to the victims of these disasters had not occupied the minds of the administrative machinery of the country, till late in the 19th century.

W. W. Hunter in his "Orissa in 1872" wrote, "throughout the Musalman and Maharatta period—Orissa history finds itself so filled with miseries inflicted by man that it had no time to pause over the lesser calamities caused by nature. Our first half century of Government effectively put a stop to the former and now, in the stillness which has succeeded, the magnitude of the latter has forced itself upon the administrative mind. We have freed the Province from invasion and violence, only to find ourselves in the presence of more potent enemies, enemies whom no treaty can bind and with whom it seemed for a time that no human foresight or energy could cope."

Floods

Floods in Orissa are an annual feature. While the three main river systems of Mahanadi, Brahmani and Baitarani have been responsible for most of the flood damage in the coastal plains, other rivers like the Subarnarekha, the Burhabalanga, the Rushikulya and of late Tel, the Vansadhara and Indrabati have also contributed to similar calamities in the other districts and have shattered the economy of the state.

One of the earliest accounts of floods in the Mahanadi system is found in the report of Sir Arthur Cotton who was deputed to study the management of the waters of the Mahanadi in 1858. The following statement available in the report gives some idea about the breaches in the embankments and the Cuttack stone revetments during the period from 1834—1858.

Statement showing the years of inundation, number of breaches and remission of land revenue, 1834-58

Year	No. of breaches	Revetment breached at Cuttack	Revenue collected (Rs.)	Revenue remitted (Rs.)	Remarks
(1)	(2)	(3)	(4)	(5)	(6)
1834-35	No record	No record	12,47,122	1,94,363	
1845-46	322	85' at Bhunder Sola 163' at Hurhures	15,62,086	42,259	
1846-47	54	91' at Hurhures 96' at Monsoon Pir 43' at Hurhures 225' at Lalbagh	16,76,893	8,664	A terrible season for revetments-6 large breaches, Hurhureghat again breached—must have endangered the Collector's House, cutchery and the city
1848-49	204	95' at Madharbund	15,97,116	34,913	..

1852-53	1167	16,24,757	42,364	Heavy inundation—the district desolated.
1853-54	942	18,21,564	69,276	The district inundated early and recovered itself.
1854-55	878	16,08,117	69,759	Extraordinary inundation the district desolated
1855-56	1373	16,43,554	21,669	A crisis, greatest inundation on record, 25½ miles of embankments carried away
1857-58	Extraordinary endangered	Inundation City nothing worse could happen except the Muhanuddy, threw its whole volume of water into the Kathrore.	..	..



Although some flood control measures including the construction of weirs across the Mahanadi, Birupa, Brahmani and Baitarani was taken in hand the means of floods continued and during the period from 1858-1896 there were four major floods occurring in 1859, 1872, 1892 and 1896. Detailed accounts of damage due to floods in 1872 and 1892 are available, but it is a fact that in 1872 both Mahanadi and Kathajodi recorded the highest gauge reading at Jobra and Ballaview till these were surpassed in the year 1965. During the year 1896 large number of breaches had occurred in the embankments of Kathajodi, Daya, Bhargavi, Kusabhadra, Brahmani and Baitarani as reported by W. A. English, S. E., Orissa Circle. But he has not given any indication about the damage to life, and property. Better information is, however, available about the flood damages for the period from 1910-1938, in the Interim Report of the Orissa Flood Advisory Committee 1938-39 as indicated below :—

Year	Damage (Rs. in lakhs)	
1911	30.00	
1919	68.00	
1920	29.00	
1925	23.00	
1926	60.00	
1927	35.00	
1929	29.00	
1933 House damage	1,45,000/—	} 56.33 lakhs
Crop damage	53,95,000/—	
Road, etc.	37,000/—	
P. W. D.	56,000/—	
1937 House damage	29,000/—	} 29.63,600 lakhs
Crop damage	28,62,600/—	
P. W. D.	59,000/—	
Road, etc.	13,000/—	
Grand Total (Rs.)	359,96,600/—	or 360 lakhs

The year 1955 saw unprecedented floods in all the major rivers of Orissa including those in the western hill districts, which caused widespread inundation of the fertile and populated areas of the state. The damages caused by the floods of 1955 was unusually heavy and the magnitude of the disaster can only be appreciated by making a comparative study of damages caused in some of the typical years of heavy floods :

Damages caused	..	1926	1933	1937	1955
Loss of life (No.)	..	15	8	6	79
Cattle and Live-stock (No.)		Insigni- ficant	162	114	7,605
Houses (No.)	..	3,914	11,484	7,363	1,29,591
Breaches (No.)	..	199 PWD	No record	75 PWD	832 PWD
		286 Private	Ditto	47 Private	247 Private
Crops (Rs.)	..	2,32,483	1,29,844	1,98,880	9,88,570
Sand-cast area (in acres)		No record	2,759	5,649	20,688
Total Evaluation (Rs.)		60 lakhs	56 lakhs	29 lakhs	111 lakhs

Though the Hirakud Dam completed in 1956 has minimised the rigour of floods in the Mahanadi to some extent, it has not succeeded in putting a stop to those in the delta area and the other major rivers continue to cause damage as before. Detailed information regarding flood damages in the state from 1967 to 1984 are appended in Appendix I and I (A).

Famines and Droughts

All scarcity conditions as well as the devastating famines to which the different parts of India have from time to time been subjected can be traced to seasons of unusual drought-the failure of the customary rainfall resulting in failure of the food crops on which the population depends.

The Indian Famine Commission appointed by the British Government in 1878 made a detailed study of the rainfall in different parts of India and had stated in their reports submitted in 1880 that it may be said generally that the portion of India, east of the 80 meridian has a rainfall of more than 40" (1000 mms.) while the portion west of the same meridian has less than 40".

They divided the country into three main zones of rainfall, i. e. (i) areas of rainfall below 15" (ii) areas where average rainfall was between 20"-35" and (iii) areas where rainfall exceeded 40." In their study of the known droughts over a period of about 100 years they had come to the conclusion that the areas with an average rainfall of 20"-35" have been frequently subjected to droughts and famines. Failure of rains in the areas of an annual average rainfall of 30"—60" is less common but when it occurs it proves very destructive as the population is dense, holdings are small and the lower class agricultural population is very poor. Orissa which comes within the former category has been subjected to the ravages of recurrent droughts.

Historical records show that Orissa had suffered from terrible famines in the 15th and 16th centuries during the reign of Kapilendrudev and Prataparudradev. Severe famine conditions have also been recorded in 1770, 1774-75 and 1792-93. Col. Arthern Cotton of the Madras Engineers who was deputed to Cuttack in 1858 for reporting on the management of the Mahanadi river had given the following account on the condition of the tract.

"In the last 23 years there have been three years of famine, 4 years of drought, 2 years of severe inundation, 7 years of inundation and 7 years of moderate seasons. Details of drought and famine conditions as available from his report are given below:

Year or season	Nature of calamity	Revenue remitted in Rs.
1836—37	Famine	4,52,532/-
1837—38	Do.	5,87,145/-
1840—41	Do.	4,98,209.38/-
1841—42	Drought	2,09,290/-
1842—43	Do.	4,86,625/-
1849—50	Do.	..
1850—51	Do.	18,465.28/-

In 1865-66, occurred a famine of the most intense character commonly known as 'Na Anka Durbhikhya' which was the greatest calamity in Orissa of the 19th century. Mortality in the three districts of Cuttack, Puri and Baleshwar was roughly estimated at 10 lakhs out of a total population of 37 lakhs. Gratuitous Relief was given to about 80,000 persons for six months from June to November 1866 of which number about 30 per cent performed some light work while the rest were too weak to work. Maunds 1,15,007 of rice and Rs. 5,53,354

in cash were spent on gratuitous relief. Cost of relief works amounted to Rs 2.50 lakhs. Famine conditions continued in the year 1867 during which an average number of 15,650 persons were fed daily at relief centres for a period of 10 months. The total cost of this amounted to Rs. 3,83,827. Relief by way of cash, clothings and rice at reduced rates or free were distributed in villages by touring officers ear-marked for the purpose. 2,17,740 persons were given relief and the cost involved was Rs. 1,73,880. Light labour relief works were provided employing an average of 5795 persons per day for 10 months which costed Rs. 1,45,216. Besides, regular relief works were undertaken to provide employment for able-bodied persons, the expenditure on which was as follows:

Irrigation Company	Rs. 6,07,400/-
P. W. D.	8,42,348/-
Local funds	87,394/-
	<hr/>
	Rs.15,37,142/-

Relief was also given to respectable classes by giving out cotton and paying for it when retracted as yarn @12 annas a seer. The yarn was supplied to the weavers who were also paid 6 pice or 12 chhataks of rice per each yard of coarse cloth. Other items of relief which may be mentioned were provisions made for settlement of homeless persons in new localities, aid given for thatching and repairing ruined houses and purchase of seed grains.

Apart from this holocaust of 1866-67 there is no record of any other drought situation in the 19th century. But drought situations of varying intensity have continued to occur during the present century specially during the post-independence period. This is perhaps due to the uninhibited depletion of forest cover in the western plateaus of the state which had hitherto ensured adequate precipitation for rice, the staple food crop of the state. Such drought conditions appeared in 1954, 1955, 1965, 1966, 1967, 1971 and 1976. However, the Government machinery for relief operations which had by now been placed on a fairly sound footing was able, on all these occasions, to successfully tackle the situation, with liberal assistance from the Union Government.

Details of damages in districts and Grama Panchayats affected by drought from 1975-76 to 1984-85 are given in Appendix II.

Cyclones

The earliest reference to a cyclone in Orissa is found in the Hathi Gumptha inscription of Emperor Kharavela of the 1st century B.C. wherein he is said to have caused repairs to the gate, ramparts and structures of the fort of Kalinganagar damaged by a storm.

More detailed information about cyclones is available from the time the British occupied Orissa in 1803. On May 27, 1823 a terrible cyclone hit Baleshwar when tidal waves had swept six miles inland killing men and animals and damaging houses and even ships. On October 31, 1831 a cyclone again mauled Baleshwar when 22,000 human beings and 50,000 cattle were killed. Another cyclone accompanied by tidal waves struck Baleshwar on October 7, 1832 causing loss of life and property. The districts of Cuttack and Puri suffered from the severe cyclone on October, 1842 when all thatched houses were levelled to the ground and many public buildings damaged. There was yet another cyclone in Puri district on October 8, 1848 when the famous Sun Temple at Konarka was damaged. The cyclone of October 16, 1874 struck Baleshwar district again and at Baleshwar not one house was left intact. A lethal cyclone hit Cuttack and Baleshwar districts on September 22, 1885. This was accompanied by floods in the Brahmani and other rivers. There was a breakdown of postal and telegraph service. The worst affected were the low lying coastal areas of Cuttack district. In Kanika area alone 1980 people died in 298 villages eleven of which were completely wiped out and not a man, animal or a house spared. On the whole 1,02,000 houses were destroyed and 16,300 cattle perished and about 5 000 persons were drowned by the tidal waves.

Baleshwar fell a prey to another cyclone on May 26, 1887 causing a lot of damage to houses but there was no loss of life except in two ships which capsized on the way to Chandbali.

A cyclone hit the coastal areas of Cuttack district on July 7, 1890 when a ship ran aground near False Point and a sailor was killed. Tidal bores caused large scale damage to crops, and wells and tanks were filled with saline water.

In the present century the districts of Puri, Cuttack and Baleshwar were ravaged by a cyclone lasting seven hours on 3rd April, 1936 which disrupted communication, destroyed crops, houses and live-stock. The cyclone of October 1942 took a toll of 200 human lives in Bhograi area of Baleshwar district.

The cyclone of October 9, 1967 which hit the coastal area of Cuttack district attained a speed of 160 miles an hour and killed 380 persons. It caused havoc in areas of 1450 square miles damaging 2191 villages and affecting 8 lakhs of people. Another cyclone hit Ganjam, Puri and Cuttack districts on October 28, 1968 killing 77 people, destroying crops over 11,000 acres (4452 hectares) and wiping out a large number of houses.

The cyclone of October 1971 which was accompanied by 15' high tidal waves has no parallel in previous records. 7623 human lives and 1,07,665 live-stock were lost, 8,16,231 houses damaged and crops over 33,22,864 acres (13,44,719 hectares) destroyed. An area of 7621 square miles in six districts with a population of 59 lakhs were affected and the economy of the state was badly shaken.

During the year 1978 in March a localised cyclone hit a part of Sadar subdivision of Dhenkanal district which claimed a toll of six human lives, 1002 live-stock, and 3930 houses were damaged. The total value of damages was estimated at 44.38 lakhs.

In the month following a tornado struck 11 villages of the border of Cuttack and Kendujhar districts killing 176 people and causing severe damage to dwelling houses. As many as 140 persons were killed in village Purunabandhagoda of Kendujhar district alone and all the dwelling houses and other buildings levelled to the ground.

Loss of life and property sustained from the cyclones from 1967 to 1984 are shown in Appendix III.

Orissa is now more frequently subjected to natural calamities of flood and drought due to ecological imbalance caused by large-scale devastation of forests and vegetative cover in the recent times. According to the Report of National Commission on Flood (1980), five states, namely, Uttar Pradesh, West Bengal, Bihar, Orissa and Assam accounted for 82 per cent of the total area affected by flood and 75 per cent of the aggregate value of damages during 1971-75. On an average, at constant prices (1952-53) the annual value of flood damages have been estimated at Rs. 51.2 crores in the fifties, Rs. 92.2 crores in the sixties, Rs. 152.4 crores during the first five years of seventies and Rs. 260 crores in the triennium 1976 to 1978. At current prices, flood damages were valued at Rs. 1,200 crores in 1977 and Rs. 1,091 crores in 1978. There has been a fivefold increase in the total damages in the latter seventies compared to 1950 to 1965, fourfold increase for crop damages and eightfold increase in property damages. The propor-

tion of cropped total area flooded has increased from 30 per cent in fifties to 40 per cent in sixties and 50 per cent in the seventies. Orissa's share of flood damage during 1971-78 was about 5 per cent of the total flood damage in the country.

The National Commission on flood recommended a fourfold approach to flood management and control; they are (1) flood modification, (2) modification of the susceptibility to flood damage, (3) modification of the loss burden and (4) bearing the loss. Construction of flood control protective works like embankments and flood walls, construction of storage reservoirs, temporary and permanent diversion of floods from one basin to another and construction of spurs and revetments, etc., are among the major engineering works which have been taken up to modify flood. Afforestation and watershed management of the catchment areas for increasing the vegetation cover have also received attention in recent years. The national policy on floods enunciated in 1954 laid down a time schedule for solving the flood problem in the country within a period of 10—12 years. Magnitude of the problem was not fully realised then. It has now been realised that complete immunity is impossible due to physical and economic factors and for a number of years to come disaster preparedness and mitigation of flood damage have to be the mainstay of disaster management which have got many facets. It calls for multi-disciplinary approach involving a long chain of activities which are to be taken up in the anticipatory stage, i.e., before occurrence of the calamities, concurrent stage, i.e., at the time of the calamities, and the post-disaster stage, i.e., immediately after occurrence of the natural calamities. The anticipatory stage is very crucial for cyclones and floods and the major disaster preparedness measures relate to proper identification of vulnerable areas and their classification according to the degree of risk faced by them, timely forecasting of floods and cyclones, issue of warnings, dissemination of warnings to the people who are likely to be affected, stock-piling of supplies, planning for mobilisation of personnel to be deployed in the affected areas for undertaking salvaging and relief operations, restoring communications, undertaking immunisation and other health measures, provision of water supply, health care for animals, etc.

In a country like India wedded to the ideals of socialism and democracy, it is not possible to think of leaving the unfortunate disaster victims to their own fate. It has been recognised that the burden imposed by the natural disasters should be shared by all the people and rescue, relief and rehabilitation schemes should be and are financed out of the state exchequer to lessen the burden of loss suffered by the victims and to restore the economic condition

of the persons affected to the pre-disaster stage. In the past before independence some *ad hoc* measures were taken to administer relief in a sporadic manner. The Government of India had appointed a Commission to enquire into the administration of relief during the famine of 1899-1900. At present famine is not thinkable in the country which is largely due to the concept of the Welfare State, improved agricultural and irrigation facilities and faster means of communications. While giving equal emphasis on rescue and relief operation including emergent relief in emergency times, equal emphasis is now being given on rehabilitation and restoration measures. Earlier, the relief administration in the state was being carried on with the help of Bihar and Orissa Famine Code, 1913 as revised in 1930. The provisions of this code became out-dated in post-independence era due to shift of administrative emphasis from law and order to social welfare and economic development which brought a radical change in the concept of relief. In the past, the primary object of relief was to save life. The Government was expected to make every effort to save the population from starvation, extremity of suffering or danger to life, ensuring at the same time that there was not tendency towards indiscriminate government charity. It was primarily a rescue operation. At present the primary object is not only to ensure that no one should die of starvation, but also to prevent physical deterioration in living standard and destitution of people. Assistance has to be provided to enable them to resume their normal or ordinary pursuits of life till return of better times. Approach to relief in the present context has become both preventive and curative. Due to change in the concept of relief and due to inadequacy of provisions in the Famine code to meet the situation arising out of frequent recurrences of flood, drought and cyclone, the Sixth Finance Commission recommended framing of a Relief Code for each state and indicated certain guidelines. The Orissa Relief Code, 1980 has since superseded the Bihar and Orissa Famine Code and it contains all the guidelines and instructions of Government to meet the situations arising out of all kinds of natural calamities. This code is being amended from time to time regarding the scale of relief admissible to various types of loss and damages to life and property.

Organisational arrangement

At the state level a high power committee known as the Natural Calamities Committee has been constituted under the chairmanship of the Chief Minister. Selected M. Ps. and M. L. As. are included in this committee besides the Secretaries and Heads of Departments concerned. The committee reviews the situations arising out of the natural calamities and gives advice regarding the

nature and quantum of relief and the policy relating to relief and rehabilitation. It also reviews performance. At Government level, the Revenue department functions as the nodal department. The field operations are coordinated and supervised by a high level officer known as Special Relief Commissioner who is given wide powers in respect of administration of relief fund and coordination and control of the activities of other departments connected with disaster management. At Divisional level the Revenue Divisional Commissioners exercise overall supervision of the disaster management programmes undertaken in their Divisions. The basic unit concerned with detailed formulation of contingent plans and their implementation is the district. Flood contingent plans are prepared by various district level officers which is dovetailed into a comprehensive plan for the district by the Collector who functions as the chief disaster manager. District Level Committees have also been constituted under the chairmanship of Collectors. Sub-collectors, Tahasildars and Block Development Officers are assigned specific tasks relating to rescue, relief and rehabilitation within their jurisdiction. During the flood season, control rooms are opened at all levels in the Revenue and Irrigation departments. The tasks generally assigned to revenue agencies include advance stocking of foodgrains, building materials, etc., in areas which are likely to be cut off by flood, positioning of power and country boats in strategic locations before the occurrence of flood, selection of elevated sites and shelters for accommodating people who are to be evacuated or rescued and provision of temporary shelters for these persons, supply of food, clothes, utensils, etc., to flood victims, assessment of house and crop damages and distribution of grants for repair and reconstruction and general assessment of the overall damage. The services of police, Home Guards, National Cadet Corps, National Service Scheme, etc., are mobilised for rescue and relief operation. In the case of major floods help of Army and Air Force is availed of for rescue and air-dropping of supplies.

In times of widespread natural calamities many national and international voluntary organisations come forward to distribute food, clothes and medicines. Some voluntary organisations also take up works of permanent nature like building houses for the flood and cyclone victims. Immediate help is also provided from Chief Minister's Relief Fund. The Red Cross also comes forward in a big way to give succour to the disaster victims.

Financing operation

The State Government have enacted a law called "Orissa Finance Relief Fund Regulation, 1937" under which the State Government shall place to the credit of the fund certain sums of money which shall be charged to Consolidated Funds

of the state. This money is known as the "margin money". Prior to the 1st April 1974 the amount of this margin money was Rs.1.25 crores. Additional central assistance was being made available to the State Government for relief expenditure on account of natural calamities as and when required under the principles enunciated by the Government of India in 1965 and this expenditure was sharable between Government of India and the State Government. The policy of financing relief expenditure was referred to the Sixth Finance Commission set up in 1972 and with their recommendation Government of India decided to dovetail relief programmes with development programmes and for building up productive communal assets. In order to enable the state to meet local situations of the distress without invoking central assistance a "margin money" of Rs.3.58 crores was fixed for the state from the financial year 1974-75. Following the recommendations of the Seventh Finance Commission, Government of India further revised the quantum and the manner of utilisation of the margin money with effect from the 1st April, 1979 as follows :

"(i) A sum of Rs. 871.00 lakhs as margin money is provided in the state's budget every year and the unspent balance out of the same is to be invested in easily encashable securities so that it can be drawn upon in times of need.

(ii) In case of drought if the relief expenditure is in excess of margin money, the state should make a contribution from its plan for providing employment opportunities as a measure of relief. The extent to which the State Government should contribute from its plan in this manner is to be assessed by a Central team deputed by the Government of India after completion necessary formalities of presentation of a memorandum approved by the State Government. The ceiling fixed in this respect is that the plan contribution may not exceed five per cent of the annual plan outlay. This plan contribution of the State Government should be treated as an addition to the plan outlay in that year and covered by advance plan assistance as were the arrangements in force during 1974-79. The adjustment of the advance plan assistance against the ceiling of the State Plan should be effected within 5 years following the end of the drought period. If the expenditure requirement, as assessed by the central team and approved by the Central High Level Committee cannot adequately be met in a particular case after the State Plan contribution is taken into account, the extra expenditure should be met by the Central assistance, half as grant and half as loan.

(iii) As regards expenditure on relief, repair and restoration of public works following flood and cyclone and other calamities

of this nature, Central assistance should be made available as non-plan grant not adjustable against the plan of the state or against Central assistance for the State Plan to the extent of 75 per cent of the total expenditure in excess of the margin money".

As frequency and intensity of natural calamities increased from year to year the quantum of margin money is found too inadequate to meet the emergent situations. This has been increased to Rs. 26.25 crores with effect from the financial year 1985-86 sharable on 50:50 basis between the centre and the state. The intensity of natural calamities has been so great in recent times that very often Government of India are moved to give additional Central assistance not merely for emergent relief, gratuitous relief, house building grant, sandcasting grant, grants to weavers, artisans and fishermen for loss of implements, etc., but also for restoration of public properties like school buildings, roads, bridges, embankments, electrical installations, etc.

The amount spent during the five years, i.e., 1979-80 to 1984-85 (except 1982-83) from margin money, other budgetary provisions of the state and grants from the centre is given in the following table :

Year	Amount spent from margin money (Rs. in lakhs)	Amount spent from other budgetary provisions	Total	Amount of grant from the Central Government
(1)	(2)	(3)	(4)	(5)
1979-80	871	1026.82 (Plan)	1,897.82	N. A.
1980-81	871	1056.00 (Plan) 3157.58 (Non-plan)	5,084.58	2820
1981-82	871	16639.87 (Non-plan) 2010.54 (Plan)	19,521.41	12,963.42
1983-84	871	2402.51 (Non-plan) 2359.55 (Plan)	5,633.06	803.76
1984-85	871	2342.90 (Non-plan) 285.00 (Plan)	3,498.90	1,261.43

APPENDIX 1

DAMAGES DUE TO FLOOD IN ORISSA

Year	Total area damaged in acres	Total cropped area damaged in acres	Human casualty	Quantity of foodgrains lost in tonnes
(1)	(2)	(3)	(4)	(5)
1967	16,80,583	6,72,937	40	19,45,088
1969	18,85,748	5,85,926	25	1,37,467
1970	22,49,487	79,661	8	1,70,389
1971	15,01,000	11,71,900	26	4,18,225
1972	52,56,960	41,89,335	8	1,59,213
1973	16,17,954	10,55,600	36	2,14,150
1974	4,56,172	2,90,716	9	9,267
1975	19,96,003	10,48,059	74	2,90,085
1976	1,09,525	40,375	8	7,022
1977	7,65,889	4,65,548	44	78,789
1978	10,24,404	8,17,289	21	13,92,591
1979	7,11,546	4,59,441	15	90,251
1980	12,89,370	7,99,250	82	3,61,163
1981	No major	Flood		
1982	83,47,000	18,17,406	131	7,44,222
1983	6,28,060	2,90,403	16	20,390
1984	17,37,500	14,75,000	28	N.A.

APPENDIX I (concl'd.)

Year	Value at market price (Rs. in lakhs)	Live-stock lost	Value of live-stock lost (Rs. in lakhs)
(1)	(6)	(7)	(8)
1967	1,056.00	7,170	2.23
1969	1,102.00	1,517	0.26
1970	1,405.00	29	0.25
1971	1,957.00	265	0.43
1972	955.00	3,506	0.12
1973	2,721.00	5,600	1.07
1974	94.00	30	0.05
1975	2,321.00	4,996	4.12
1976	56.18	68	0.20
1977	750.84	781	0.85
1978	1,116.97	272	0.40
1979	49.72	85	0.044
1980	3,649.76	16,619	19.02
1981	No major flood		
1982	9,363.51	41,990	132.55
1983	313.59	300	1.20
1984	3,045.21	465	N. A.

APPENDIX I (a)
DWELLING HOUSES DESTROYED

Year	Comple- tely destro- yed	Partly destro- yed	Cost of repair and re- construc- tions (in lakhs)	No. of public utilities damaged	Cost of repairs and re- construc- tions (in lakhs)
(1)	(2)	(3)	(4)	(5)	(6)
1967	11,962	9,256	42.00	17,929	34.16
1969	7,848	15,506	46.00	26,659	51.24
1970	1,045	2,378	8.00	8,903	8.75
1971	95,043	..	190.00	..	..
1972	847	1,748	5.00	16,159	93.77
1973	9,058	18,725	56.00	34,431	68.35
1974	747	2,556	6.60	4,920	19.57
1975	27,680	1,16,473	452.12	7,806	453.00
1976	3,445	..	2.94	909	105.63
1977	4,157	14,517	57.77	8,511	1,112.66
1978	4,511	22,620	117.37	13,652	717.79
1979	47	1,891	8.84	16,569	413.91
1980	25,759	1,05,222	905.03	8,912	2,858.90
1981	No major flood				
1982	1,35,994	4,31,700	5,801.90	31,395	35,700.95
1983	285	4,996	23.735	2,979	903.24
1984	23,499	..	231.03	..	..

APPENDIX II

DAMAGES DUE TO DROUGHT IN ORISSA

Name of the district	No. of G. Ps. affected sustaining crop loss of more than 50 per cent				
	1975-76	1976-77	1977-78	1978-79	1979-80
(1)	(2)	(3)	(4)	(5)	(6)
1. Baleshwar ..	90	70	..	..	142
2. Balangir ..	176	135	6	58	195
3. Cuttack ..	130	324	103	9	363
4. Dhenkanal ..	167	210	37	5	219
5. Ganjam ..	204	161	210	1	287
6. Kalahandi ..	140	93	45	..	211
7. Kendujhar ..	80	153	..	..	153
8. Koraput ..	220	385	61	3	179
8. Mayurbhanj	72	99	2	...	232
10. Puri ..	133	278	2	22	142
11. Phulabani ..	130	139	..	..	94
12. Sambalpur ..	204	174	4	12	255
13. Sundargarh	88	184	..	...	137
Total ..	1,834	2,405	470	110	2,609

APPENDIX II (concl.)

Name of the district	No. of G. Ps. affected sustaining crop loss of more than 50 per cent				
	1980-81	1981-82	1982-83	1983-84	1984-85
(1)	(7)	(8)	(9)	(10)	(11)
1. Baleshwar	...	71	214	9	173
2. Balangir	194	1	238
3. Cuttack	381	..	53
4. Dhenkanal	6	210	..	203
5. Ganjam	84	220	5	383
6. Kalahandi	147	25	156
7 Kendujhar	50	168	..	29
8. Koraput	36	161	..	267
9. Mayurbhanj	59	249	7	13
10. Puri	180	94	..	141
11. Phulabani	237	2	153
12. Sambalpur	6	261	..	90
13. Sundargarh	6	120	..	57
Total	498	2,656	49	1,956

APPENDIX III

DAMAGE DUE TO CYCLONE IN ORISSA

Year		Cropped area damaged in Ac.	Human casualty	Quantity of grants lost in tonnes	Value in lakhs of Rs.
(1)		(2)	(3)	(4)	(5)
1967	..	1,51,105	327	2,714	22.50
1968	..	4,47,256	78	8,850	90.00
1971	..	33,22,861	7,623	8,05,215	3,655.63
1978		7,173	6	3,500	24.24
Dhenkanal, Kendujhar & Cuttack in Tornado	}	200	176	..	4.00
1979	..	81	3	..	1.32
1980	.	Nil	..	..	..
1981	..	56,561	41	..	156.27
1982	..	3,43,417	261	..	496.90
1983	..	Nil	..	..	..
1984	..	90.90	3	..	0.45

APPENDIX III (contd.)

Year		Live-stock lost	Value in lakhs (Rs.)	No. of houses damaged fully	No. of houses partly damaged
(1)		(6)	(7)	(8)	(9)
1967	..	10,240	3.34	52,566	52,799
1968	..	22,285	6.70	25,352	63,579
1971	..	1,07,685	33.49	8,16,231	..
1978	..	1,002	2.12	586	3,344
Dhenkanal, Kendujhar Cuttack in Tornado	& }	1,176	3.00	473	318
1979	..	21	0.05	37	285
1980	..	Nil	..	..	..
1981	..	430	5.27	259	29,382
1982	..	7,871	N. A.	8,00,697 (fully and partially)	..
1983	..	Nil	..	..	..
1984	..	61	0.56	667	11,773

APPENDIX III (concl'd.)

Year		Cost of restoration (Rs. in lakhs)	Public property damaged	Cost of restoration (Rs. in lakhs)
(1)		(10)	(11)	(12)
1967	..	210.00	34,087	68.30
1968	..	178.00	85,993	170.82
1971	..	1,632.00	20,000	5,135.00
1978	..	13.19	81	4.83
Dhenkanal, Kendujhar Cuttack in Tornado	& }	147.90	36	25.00
1979	..	1.00	..	5.01
1980	..	..	..	..
1981	..	54.84	1,090	246.32
1982	..	1,001.86	..	6,843.25
1983	..	..	..	..
1984	..	61.98	2,817	191.46

CHAPTER II

INDUSTRIES

Old-time Industries

Various types of industries developed in Orissa in ancient time. One of the main industries was stone-cutting and stone-masonry. The art of stone-cutting and stone-dressing reached its climax in India during the time of Asoka. The earliest figure sculpture in Orissa is the Dhauli elephant attributed to Asoka. This figure indicates an indigenous school of art invigorated by Asoka. The excavation of caves started by Asoka had its effect in Kalinga. Large number of cave temples and cave-dwellings were caused to be excavated by the Chedi king Kharavela in first century B. C. The excavations of Sisupalgarh have brought to light the remains of a strong fort with lofty towers and domes indicating the marvels of the art of stone-masonry.

During the medieval time the art of stone dressing and stone-masonry developed to a great extent with the construction of temples dedicated to gods with magnificent curvilinear Vimanas. Along with the temples, sculptures and decorative figures were carved out both in relief and in round. Very beautiful round figures are found in the Buddhist sites at Ratnagiri, Lalitagiri and Udayagiri in the Cuttack district.

The other important industry was metal smelting and casting. Huge iron beams and iron clamps have been used in the temples at Bhubaneshwar, Puri and Konarka. These beams were cast by local artisans by indigenous process. War implements like swords, shields, arrows, spears, etc., were being manufactured in various forms and sizes since the early historic period. The circulation of metallic coins which were mostly cast coins indicates new development in the technique of metal industry. The punch-marked coins were in circulation in Orissa from the pre-Maurya period down to the 5th century A. D. Kushan copper coins were also being widely circulated. In Orissa gold coins are found from the 4th century A. D., onwards. Some important dynasties like the Nalas, the Sarbhapuriyas and the Gangas circulated the gold coins in large numbers. Gold and silver ornaments were popular both among the males and the females since earliest time. In the caves of Khandagiri and Udayagiri the kings and the queens have bejewelled in *tiara*, necklaces and armlets. Ladies are found with heavy ear-studs and heavy anklets and armlets. The medieval temples portray the ladies with various ornaments indicating the excellence of the art of smithery through the ages.

Orissa excelled in textile art since early time, although the garments of both the males and the females in the caves of Khandagiri and Udayagiri are simple. The quality and texture of the clothings indicate great advancement of the art of weaving. In some of the figures we find the transparent garments indicating the beauty of the flesh. Varieties of textiles and muslin goods were manufactured during the medieval period. The decorative figures in the temples exhibit varieties of textile and muslin fabrics. Textile art thrived in Orissa as late as the time of the East India Company. It may be stated that the tie and dye method of the Orissan textile industry developed since early medieval period and continued till the present day. The textile art of Orissa had its influence over Indonesia and other Pacific islands since early time.

The art of painting as an avocation developed in ancient Orissa and the guild of painters thrived since 2nd-1st century B.C. Some of the caves and decorative sculptures of Khandagiri and Udayagiri were painted. Traces of colour works are seen yet in some parts of the caves. The caves of Manikmada in the Sundargarh district were richly painted. No doubt some of the paintings of these caves belong to the prehistoric period, but there are other painted figures attributed to the early Christian era. The most important early painting in Orissa is found in the Ravanachhaya cave-shelter at Sitabinjhi in the district of Kendujhar. These paintings indicate high technique not only in the use of colours but also in expressing emotions and love of nature.

Wood-carving was also an old industry of Orissa. We find evidence of the use of wooden chariots in battle-fields and also for pleasure trips. In the army of Kharavela chariot constituted an important wing. The use of chariot in the war discontinued in the early Christian centuries but chariot as the mode of conveyance continued throughout the medieval period. Wooden images of deities were being worshipped since early time in Orissa. The image of Stambeswari is a wooden pole and that of Jagannath is carved out of wood. The car festival of Lord Jagannath exhibit richly carved chariots. Besides cult images, varieties of toy images were also being manufactured in wood and bamboo.

The traders of Kalinga were famous for maritime activities and as such the shipbuilding industry thrived since ancient time. There were important ports at Tamralipti, Palur and Srikshetra, and large ships used to sail from those ports to Ceylone (now Sri Lanka) and Indonesian islands. Even elephants were being transported overseas by the ships of Kalinga.

Ivory and hornworks are also important ancient handicrafts of Orissa. The excavations of Sisupalgarh have brought to light ivory and hornworks like combs and decorative figures. Beautiful furniture including stools, sofas, boxes and containers are found to be made of wood and inlaid with ivory and horn. The sculptures and the decorative designs of old caves and medieval temples are exhibited in varieties of ivory and hornworks.

Once flourishing industries of this region did not have a smooth sailing during the Muslim and Maratha rules, and even in the British administration. The artisans of the soil were discouraged in practising their hereditary crafts due to lack of royal patronage, decline in maritime trade, competition from the European traders and the adverse economic condition of the people. Gradually the artisans were thrown out of employment and their traditional skill was on the verge of extinction.

Utkal Gourab Madhusudan Das, one of the founders of the modern Orissa, did some work in reviving the cottage and small Industries of this region during the first decade of this century. He encouraged the filigree workers of Orissa and established a factory named 'Utkal Tannery' for production of quality leather goods by the artisans of the soil. Next in the field was late Bhikari Charan Patnaik whose unbreakable toys made of paper pulp are still in the living memory.

Orissa was not a separate province till 1st April, 1936. The neighbouring provinces to which the vast Oriya tracts were annexed took little interest in industrialising the region although the land is enormously rich in natural resources and has got a long sea-coast line. The lone industry in the organised sector in the area was a sugar factory which was established at Asika in Ganjam district in 1854 by one Frederic James Vivian Minchin, a German settled in India, for manufacture of crystal sugar. This was a pioneering attempt not only in India but also in Asia, because it was designed to produce crystal sugar in the defusion process (developed in England in 1836) by utilising sugar-cane beet as raw material. This factory with a processing capacity of 100 tonnes of canes per day was functioning up to 1946. Even though such a factory was functioning as early as mid-fifties of the last century, the industrial activities in the pre-independence period in Orissa were characterised by domination of a few factories and cottage-type units engaged in the manufacture of a few common private consumption requirements. Apart from a few spinning and oil-mills, a small glass factory at Barang (production started in 1937), a sugar factory at Rayagarha (production started in 1937) and a paper mill at Brajarajnagar (production started in 1939) were the few units which then constituted the organised industries sector in the province. Later the textile mill of Chaudwar which started production in 1949 was added to the organised sector.

This factory was the brain child of the first Oriya industrialist of late forties, Shri Bijoyananda Patnaik. He also promoted another flourishing industrial concern, viz., M/s. Kalinga Tubes Ltd., at Chaudwar which started production of steel galvanised pipes and tubular truss from the 1st June, 1956, both for export and for internal marketing. The factory ceased functioning in the early part of eighties due to labour unrest. One re-rolling mill at Cuttack was established in 1951-52 by another industrialist, Shri Naba Kishore Mohanty for production of iron rods, etc., and was later sold off as it became sick. The purchaser revived production but subsequently due to labour unrest it has now become sick. Inadequate infrastructure and limited resources of the provincial Government could not succeed in industrial utilization of the various resources that were existing in this region before Independence.

Industrial Development during Five-Year Plan Periods

(1st Plan)

During the 1st Five-year Plan, planned efforts were made for development of infrastructure. A number of large-scale industries were promoted and licences were obtained in the state. These licences included projects like ferro-manganese plants at Joda and Rayagarha, a cement factory at Rajgangpur, a steel tube mill and a paper mill at Chaudwar, an aluminium smelter and a cable factory at Hirakud. All these factories came up during the Second Plan period. Towards the end of the 1st Plan a steel plant at Rourkela in the public sector was also promoted. A few oil-mills, saw-mills, light engineering units, rice-mills and carpentry units were encouraged in the small-scale sector, particularly, in the urban areas of Cuttack, Rourkela, Brahmapur, Sambalpur, etc. At Cuttack preliminary shape was given for setting up an industrial estate.

(2nd Plan)

Keeping in line with importance of the core sector and development of the large and medium industries in the country, the State Government had also emphasised for development of a number of good projects. Necessary infrastructural back up was done by the Orissa Government through its Machhakund Hydro-Electricity Projects and Hirakud Multi-purpose River Valley Project. New railway links were also opened during this plan period. In order to boost up the activities in the small-scale sector and to promote a few non-traditional items by setting up small units, a programme for erection of five industrial estates was taken up in different parts of the state. Similarly, large vacant areas were earmarked as industrial area at Rourkela for the growth of medium-sized industries.

Further a scheme known as "the Pilot Projects Scheme of Orissa" was implemented. As per the scheme, the State Government encouraged several small companies with ninety per cent finance from the Government and the balance ten per cent subscribed by the private entrepreneurs. Thirty-seven such companies were set up during the plan period which included industries like cast-iron foundry, instrument factory, board mill, steel structural units, electronic storage battery, etc. The State Government also set up a few commercial units of its own like K.S. Pottery Development Centre at Jharsuguda, mechanised tile factories at Kendraparha, Panikoili and Baleshwar, tanneries at Titilagarh and Boudh, and a foot-wear unit at Cuttack. The large and medium projects which were licensed during 1st Plan period were released during this plan. A modern refractory unit was encouraged at Belpaharh. Another project for setting up a modern refractory unit at Lathikata was also formulated. A large number of small-scale units came up in the various industrial estates set up by the State Government. The Orissa State Financial Corporation was established to provide institutional credit to the entrepreneurs. The Corporation supplemented the funds released under the Orissa State-Aid to Industries Act. The State Bank of India and other commercial banks also entered the field of industrial financing.

(3rd Plan)

During the Third Five-Year Plan period the Industrial Development Corporation Ltd., was formed (1962) with the object of setting up a number of large and medium industries. A cement plant at Baragarh, a re-rolling mill and a cable factory at Hirakud (Sambalpur district), a tile factory at Chaudwar (Cuttack district), a salt raising factory at Sumandi (Ganjam district), a pig iron factory at Barbil (Kendujhar district), etc., were promoted through the above mentioned Corporation. During this period the Industrial Development Corporation financed, among others, the ferro-chrome project at Jajpur Road. The Rourkela Steel Plant was expanded from one million tonnes to 1.8 million tonnes and an aero-engine factory at Sunabeda in the district of Koraput came up in the Central sector. During this period a spinning mill at Jharsuguda (Sambalpur district), a paper mill at Rayagarha (Koraput district), a graphite crucible manufacturing unit at Titilagarh (Balangir district) and a heavy structural and machine building plant at Kansbahal (Sundargarh district) were also started in the private sector.

In order to initiate rapid development of small-scale industries, a specific programme of rural industrialisation was drawn up by the State Government called as "Panchayat Samiti Industries Scheme". The Panchayat Industries programme started during 1962-63. To evoke better public participation in rural areas, it was decided to set

up industries in Grama Panchayat areas. While selecting the location of industries the economic factors like availability of raw materials, man power, etc., were taken into consideration. These industries were mainly of two categories, (a) processing industries of agricultural produce and (b) industries which seek to provide for better skills and improved equipments to the local artisans and workers. Nearly 130 industrial units consisting of rice mills, carpentry, light engineering works, sugar-mills, etc., came up. The Orissa Small Industries Corporation Ltd. was organised to assist the small industries and to implement various projects under the Panchayat Industries programme. The Industrial Development Corporation also took steps for setting up a few units of its own, particularly, to serve as ancilliary units and took up establishment of a group of industries for rehabilitation of East Pakistan (now Bangladesh) refugees in Koraput district.

(Fourth Plan)

During the Fourth Five-Year Plan period emphasis was laid on acceleration of industrial growth in the small-scale sector. The Government of India in its industrial policy also formulated a number of schemes specifically designed for development of industries in rural areas. A few rural industrial projects were implemented and four districts, viz., Cuttack, Sambalpur, Balangir and Kalahandi were covered under the RIP scheme of the Government of India. The Central Government provided loans, grants, managerial subsidy and other physical and fiscal incentives to the entrepreneurs for setting up their industries in the project areas. During this plan period also, the Planning Commission in consultation with the State Government identified eight districts as backward. Six of them, viz., Kendujhar, Koraput, Mayurbhanj, Kalahandi, Dhenkanal and Balangir were specially backward districts. The other two districts were Balasore and Phulabani. Special schemes for granting subsidy on fixed assets, rebate on income-tax, concessional rate of interest, etc., were formulated for industries to be promoted in these identified backward areas. The State Government had also formulated its own industrial policy and declared a number of concessions which included sales tax holiday, exemption of octroi duty, concession on power rate, allotment of land at cheaper rate and providing ten per cent price preference to the small-scale units participating in the State Government Store Purchase Programme, etc.

Under the Central scheme a number of industrial estates were created, particularly, under the 'half-a-million job programme' (a self-employment scheme of the Government of India). However, towards 1973-74, the Government of India discontinued its providing grants to the State Government for erection of industrial estates.

During this plan period a number of large and medium industries like a solvent extraction plant at Rairangpur (Mayurbhanj district),

a ferro-silicon plant at Theruveli (Koraput district) and a fertiliser plant at Rourkela (Sundargarh district) came up. Further, in the Central sector works started with regard to implementation of a gigantic coal-based fertiliser complex at Talcher.

The Orissa Small Industries Corporation Ltd., was renamed as the Orissa Agro and Small Industries Corporation Ltd. It was again bifurcated and the existing Corporation was renamed as the Orissa Agro Industries Corporation Ltd., and a new corporation under the name and style of the Orissa Small Industries Corporation was formed during this plan period. The objective of creating this Corporation was to assist the small-scale industries in providing scarce indigenous and imported raw materials, erect industrial estates, organise training programme to the educated unemployed, set up a few units of its own, provide machinery on hire purchase basis under self-employment scheme, etc. Efforts were initiated to set up a T. V. unit under the management of the Corporation. The Industrial Promotion and Investment Corporation was formed to serve as the main agency for promotion of large and medium industries.

(Fifth Plan)

During the Fifth Plan Period, the State Government formulated its own industrial policy to provide various concessions both fiscal and physical. These concessions included allotment of land at cheaper cost, exemption of octroi, holiday on sales tax, price preference to the small-scale industries for participation in the 'State Government Store Purchase Programme', concessions for power rates, etc. A number of industrial estates were programmed in different growth centres of the state. The fertiliser plant at Talcher went into production. The Leather Corporation of Orissa Ltd. was formed to manage existing Government units and promote new leather and foot-wear units.

(Sixth Plan)

During the Sixth Five-Year Plan period, the State Government programmed for promotion of a large number of big and medium industries. It was decided to establish 1,000 industries with an investment of Rs. 1000 crores. This programme mainly related to large and medium industries. Similarly, corresponding to this programme a specific programme of developing modern and sophisticated industries in small-scale sector was also thought of. This included 187 small-scale units with a capital investment of nearly Rs. 50 crores with an employment potential for 25,000 persons. Fifty growth centres were identified in different parts of the state for giving a thrust to the development of industries. With a view to deal with all services and supports required for promotion, establishment and follow up action in respect of small and village industries, the District Industries Centres have been

set up in each district since July 1978. A new corporation called the Infrastructural Development Corporation of Orissa Ltd., was formed to create and provide infrastructural facility to the needy entrepreneurs of the state. In the Central sector work started for a giant Rs. 1,600 crores Alumina-complex with French collaboration in Damanjodi of Koraput district and Anugul of Dhenkanal district. The work was completed in later part of eighties. A Phosphatic Fertiliser Plant at Paradeep was also constructed. This apart, it has been planned to set up a steel plant at Daitari in the Cuttack district.

A bold, pragmatic and progressive industrial policy was formulated by the State Government in August 1980. This liberal policy included a package of attractive incentives and concessions for entrepreneurs along with well defined administrative measures aimed at removing bottle-necks and expediting assistance to industries. The concessions included provision of various infrastructural facilities like land, water and power. The administrative measures outlined in the policy included a single point contact forum (the industrial Co-ordination Bureau in the Industrial Promotion and Investment Corporations of Orissa Ltd., for large and medium industries and District Industries Centres for small industries) where entrepreneurs could secure all assistance within a stipulated period of twenty-one days.

Industrial growth in different regions of the state (Organised Sector)

The industrial development of different regions of the state is not balanced due to physical and geographical barriers and most of the districts are still industrially under-developed. In the "Report on Annual Survey of Industries in Orissa (Organised Factory Sector), 1977-78", it is revealed that among the thirteen districts of the state, Sundargarh tops the list for its industrial activities. In 1977-78, the district had ten large and medium industrial units including the steel and fertiliser plants at Rourkela and a cement factory at Rajgangpur. Next in importance is the district of Sambalpur with ten large and medium industrial units. The industrial activities of the district have developed to a great extent due to the Hirakud Dam project. The industries of the district included a paper mill at Brajarajnagar, one aluminium plant and a re-rolling mill at Hirakud, and a cement factory at Baragarh. The district of Cuttack gets the third place. The district had fourteen large and medium industries including a textile mill and a paper mill at Chaudwar, and a ferro-chrome plant at Jajpur Road. Among other districts, Puri, Koraput and Kendujhar are important. The importance of Puri district was due to the location of the Orissa State Electricity Board which is a very large State Government undertaking for generation and transmission of electrical energy in the

*. Bureau of Statistics and Economics, Orissa

state. The large and medium industries in the Koraput and Kendujhar districts included a sugar factory and a ferro-manganese plant at Rayagarha, a ferro-alloys plant at Theruvuli (all in the district of Koraput), one iron works at Barbil and a ferro-manganese plant at Joda (all in Kendujhar district).

District-wise various industrial progress indicators for 1977-78 have been given in Appendix I. From this it is seen that the amount of fixed capital of Rs. 24 lakhs per factory in 1977-78 was the highest in the district of Sundargarh. This district had also highest contribution to the state income in terms of value added per employee which indicates the efficiency of labour in industrial production. The value added per employee in the district was Rs. 29,000.

The highest fixed capital per employee was Rs. 79,000 in the district of Puri. It was lowest (Rs. 4,000) in the districts of Kalahandi and Phulabani. It is indicated that most of the industrial units in the district of Puri were capital-intensive whereas the industrial units of the Kalahandi and Phulabani districts were labour intensive. The output per worker was highest in Kendujhar district (Rs. 147 thousands) and lowest in Kalahandi district (Rs. 16,000) during 1977-78. Output per rupee of input was highest (Rs. 1.75) in the district of Puri and lowest (Rs. 1.09), in Mayurbhanj district. The highest output per rupee of fixed capital was Rs. 8.22 in Mayurbhanj district and the lowest was Rs. 0.11 in Puri district during 1977-78.

The total capital investment in the factory sector was Rs. 497 crores in the state during 1970-71. This increased to Rs. 753 crores during 1976-77 and Rs. 802 crores during 1977-78. The capital investment of the five major districts, viz., Cuttack, Koraput, Puri, Sambalpur and Sundargarh was Rs. 774 crores during 1977-78 which came to 96.5 per cent of the total investment of the state. Among the five districts, investment in Sundargarh district was the highest which was fifty per cent of the total investment of the state.

During 1977-78, the number of working factories in the state was 957 out of which 944 factories submitted report to the Bureau of Statistics and Economics of Orissa. This included 187(184)* factories in Cuttack, 54(52) factories in Baleshwar, 24(24) factories in Balangir, 32(32) factories in Dhenkanal, 119(117) factories in Ganjam, 18(18) factories in Kalahandi, 16(16) factories in Kendujhar, 80(80) factories in Koraput, 46(46) factories in Mayurbhanj, 4(4) factories in Phulabani, 140(139) factories in Puri, 151(150) factories in Sambalpur and 86(82) factories in Sundargarh districts.

*Bracketed number of factories submitted returns to the Bureau of Statistics and Economics, Orissa.

The number of employees working in these factories increased from 90 thousands during 1970-71 to 112 thousands during 1975-76 and 116 thousands during 1977-78. Out of the total employees of 1977-78, 93 thousands were working in large and medium-scale industries and the rest 23 thousands in small-scale industries. The number of employees working in the above year in different districts was, Baleshwar 1,408, Balangir 965, Kalahandi 394, Koraput 7,660, Kendujhar 1,100, Mayurbhanj 1,341, Puri 30,485, Sambalpur 16,036, Phulabani 120, Sundargarh 33,344, Cuttack 17,974, Dhenkanal 628 and Ganjam 4,390. From this it is revealed that the districts of Cuttack, Puri, Sambalpur, Koraput and Sundargarh shared 91 per cent of the total employment in 1977-78. Employment in Sundargarh district was 30 per cent of the total employment of the state.

In the following table is given capital, employment, input, and value added by size of industries, emoluments paid to employees, etc., of the state during 1977-78.

Sl. No.	Selected characteristics	Units	Large-scale industries	Medium-scale industries	Small-scale industries	Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	Number of operating factories	Nil	55	44	858	957
2	Number of factories submitted returns to the Bureau of Statistics	Nil	55	44	845	944
3	Productive capital	Lakhs of Rs.	75,755	1,721	2,745	80,221
4	Invested capital	Ditto	76,318	2,176	2,500	80,994
5	Fixed capital	Ditto	50,301	1,080	1,091	52,472
6	Working capital	Ditto	25,454	640	1,654	27,748
7	Total borrowing	Ditto	32,313	1,165	1,292	34,770
8	Total number of persons employed	..	82,144	10,522	23,178	1,15,844
9	Total man-days worked	Lakhs of man-days	291	24	54	369

*A Report on Annual Survey of Industries in Orissa (Organised Factory Sector), 1977-78

Sl. No.	Selected characteristics	Units	Large-scale industries	Medium-scale industries	Small-scale industries	Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)
10	Emoluments paid to employees	Lakhs of Rs.	6,358	377	561	7,296
11	Money value of other benefits	Ditto	894	32	28	954
12	Total value of inputs	Ditto	34,916	2,917	7,541	45,374
13	Gross value of output	Ditto	52,901	3,652	8,870	65,423
14	Depreciation	Ditto	3,032	100	107	3,239
15	Value added by manufacture	Ditto	14,953	635	1,222	16,810

Out of 957 factories* operating in the state during the above year, 107 were in public sector, 108 in joint sector and 742 in private sector. In the public sector, factories were mostly large and medium-scale industries. These industries employed sixty thousand persons against forty-three thousands in private sector and thirteen thousands in joint sector. The table given below indicates capital, employment, emoluments paid to employees, input and output, and value added of the registered factories in public, joint and private sectors in the state during 1977-78*.

*A Report on Annual Survey of Industries in Orissa (Organised Factory Sector), 1977-78

*Number of operating factories in the state during 1984-85 was 1338, out of which 148 were in public sector, 51 in joint sector, 1031 in private sector and 108 in co-operative sector. Of these industries, 91 were in large-scale, 83 in medium-scale and 1164 in small-scale. There were 1269 factories furnished return for compilation of the Annual Survey of Industries (Organised Factory Sector), Orissa, for 1984-85. These factories employed 1,38,470 persons of whom 80,543 were engaged in public sector, 40,827 in private sector, 7,057 in co-operative sector and the rest 10,043 in joint sector. The factory sector had a productive capital investment of Rs. 2,004 crores.

Sl. No.	Selected characteristics	Units	Public Sector	Joint Sector	Private Sector	Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	Number of operating factories	..	107	108	742	957
2	Number of reporting factories	..	107	108	729	944
3	Productive capital	Lakhs of Rs.	6,69,40	23,53	1,09,28	8,02,21
4	Invested capital	Ditto	6,67,81	28,01	1,14,12	8,09,94
5	Fixed capital	Ditto	4,48,98	13,00	62,74	5,24,72
6	Working capital	Ditto	2,20,42	10,53	46,53	2,77,48
7	Total borrowings	Ditto	2,84,16	15,71	47,83	3,47,70
8	Total number of persons employed	Ditto	60,221	12,545	43,078	1,15,844
9	Total man-days worked	Lakhs of man-days	2,14	32	1,23	369
10	Emoluments paid to employees	Lakhs of Rs.	46,88	599	20,10	72,97
11	Money value of other benefits	Ditto	6,61	66	2,27	9,54

Sl. No.	Selected characteristics	Units	Public Sector	Joint Sector	Private Sector	Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)
12	Total value of inputs	Lakhs of Rs.	2,36,23	42,33	1,75,17	4,53,73
13	Depreciation	Ditto	24,98	1,55	5,86	32,39
14	Gross value of output	Ditto	3,66,15	54,62	2,33,46	6,54,23
15	Value added by manufacture	Ditto	1,04,94	10,74	52,42	1,68,10

The paper and paper board industry, ferro-alloys industry, fertiliser and pesticides industry, structural clay products industry, iron and steel industry, foundries for casting and forging iron and steel industry, and generation and transmission of electrical energy industry were the seven major industries of the state the capital investment of which was about 90 per cent of the capital investment of all industries during 1977-78. These seven major industries shared 64 per cent of the total value of input of all the industries. So far as the value of out-put is concerned the iron and steel industry stood first with 42 per cent of the total value of output in factory sector in the state. The next six major industries in order were : (a) manufacture of paper and paper board industry, (b) manufacture of structural clay products industry, (c) generation and transmission of electric energy, (d) manufacturing of fertiliser and pesticides industry, (e) cotton spinning, weaving and cotton textiles finishing industry and (f) grain mill products industry. The value of output of these seven industries constituted about 72 per cent of the total value of output in all the industries during 1977-78.

In the following table some important progress indicators on the average for all industries in the state during the period from 1973-74 to 1977-78 are given*.

Year	Fixed capital per factory ('000 Rs.)	Fixed capital per employee ('000 Rs.)	Productive capital per employee ('000 Rs.)	Output per rupee of fixed capital (Rs.)	Output added of input (Rs.)
(1)	(2)	(3)	(4)	(5)	(6)
1973-74	4,632	42	55	0.73	1.72
1974-75	5,310	41	60	0.95	1.55
1975-76	5,443	38	64	1.17	1.28
1976-77	5,807	45	68	1.20	1.48
1977-78	5,559	46	71	1.25	1.44

Output per worker ('000 Rs.)	Input per rupee of output ('000 Rs.)	Value added per rupee of output (Rs.)	Value added per employee	Annual emolument per employee
(7)	(8)	(9)	(10)	(11)
41	0.58	0.51	9	6
53	0.64	0.43	11	6
61	0.78	0.24	8	7
71	0.67	0.40	15	6
76	0.69	0.38	15	6

*A Report on Annual Survey of Industries in Orissa
(Organised Factory Sector) 1977-78

Power

The power generation in Orissa started in the early part of the 20th century, when Sir Basudev Sudhaladev, the ex-ruler of the erst-while state of Bamara installed diesel generators in Deogarh. Subsequently these units were replaced by the 12 KW. hydro-generating sets by utilising the water of a local waterfall. After that a few relatively small-sized diesel generators were installed here and there to electrify important towns of Orissa. The diesel stations were mostly managed by private companies.

After Independence, with the object of rapid development of the state the programme of power generation and transmission was launched. During the fifties of this century the State Government established their first 750 KW thermal power station at Jobra in Cuttack town followed by one bigger thermal power station of 5,000 KW at Chaudwar and another 6,500 kw. thermal power station at Rajgangpur to supply power to the industries in the concerned areas. In course of time all these thermal power stations were closed with the availability of power from other sources.

Hydro and Thermal projects

The Machhakund Hydro-Power Project, a joint venture of the Government of Orissa and the Government of the then Madras (now the Government of Andhra Pradesh) started producing power from 1955. The project has 114.75 MW installation capacity (34 MW Orissa's share) having three units of 17 MW each and three units of 21 MW each.

The Hirakud Multi-purpose Project was completed in 1956-57. The power was available from this project by January 1957. This Hydro-Electric Project has an installed capacity of 270 MW with 120 MW energy capacity. This project consists of two power houses at Burla and Chipilima, the power house No. I at Burla (4X37.5 MW = 150 MW) draws water for power generation from the Hirakud reservoir. The water released from the power house No. I flows through the water conductor system to the power house No. II at Chipilima (5X24 MW = 120 MW) for secondary power generation.

After completion of the above two power projects by the end of the Second Five-Year Plan, efforts were made during the Third Five-Year Plan for more power generation by the State Government. As a result, Talcher Thermal power station was sanctioned with 250 MW capacity having four units of 62.5 MW each in 1961. Work in the field started in 1963, and power from this station was available from December 1967. The Balimela Power project was undertaken during this time. Power was available from the Balimela Hydro-Power station in 1973. This station has an installed capacity of 360 MW (six units of 60 MW each). The units have been commissioned one after the other during the period from August 1973 to January 1977.

Orissa State Electricity Board

The Orissa State Electricity Board was formed in March 1961 to look after generation, transmission and distribution of power in the state. The State Government transferred from their control to the control of the Board, the office of the Chief Engineer, Electricity from the 1st June, 1962, the Hirakud power system from the 1st April, 1969, Talcher Thermal station from the 1st June, 1970 and the Balimela Power House from the 1st April, 1979. The Board's head office is located at Bhubaneswar.

The installed capacity of each of the power projects of the state during middle of the Seventh Plan period is given in the following statement.

Project	Installed capacity (In MW)*
Hirakud ..	270
Balimela ..	360
Talcher Thermal ..	250
Machhakund (Orissa's share) ..	34
	<hr/> 914 <hr/>

The state produced only 9.6 MW of power in 1950. At the end of the First Five Year Plan period, this had risen to 32 MW. The Second Plan period ended with the installed capacity at 260 MW. The Third Plan improved it further to 310 MW. This had risen further during the Fourth and Fifth Five Year Plans and has reached the present capacity of 914** MW in the middle of the Sixth Five-Year Plan.

The power projects have capacity to make available 647 MW of power in peak and can produce 3,436 million units of power. The peaking capacity of different generating stations are (a) Machhakund Hydro (Orissa's share)-34 MW, (b) Hirakud Hydro-210 MW, (c) Talcher Thermal 153 MW and (d) Balimela Hydro-250 MW.

The details of other four generation stations which are commissioned or to be commissioned by June 1992 are given in the table below:

Sl. No.	Name of the Project	Installed capacity	Year of Commissioning
1	Talcher Thermal-Stage-II ..	220MW	Before beginning of the 7th Five Year Plan

*MW for megawatt

**During 1988-89 two units of the Upper Kolab Electric Project having installed capacity of 80 megawatt each were commissioned and the installed capacity of the state increased to 1394 megawatt with Hydro-thermal ratio at 66:34.

Sl. No.	Name of the Project	Installed capacity	Year of Commissioning
2	Hirakud 7th Unit	37.5MW	September 1990
3	Rengali (Hydro)-Stage-I	100MW	1st Unit 50 MW August 1985
			2nd Unit 50 MW March 1986
	Stage-II	150MW	3rd Unit 50 MW August 1989
			4th Unit 50 MW March 1990
			5th Unit 50 MW June 1992 (Target)
4	Upper Kolab (Hydro)-Stage-I	240MW	1st Unit 80 MW March 1988
			2nd Unit 80 MW April 1988
			3rd Unit 80MW February 1990
	Stage-II	80MW	4th Unit 80 MW March 1992 (Target)

Construction of Transmission Lines : Length and capacity

For transmission of power from the generating stations to various places of the state, there is a net work of transmission and distribution lines.

With the construction of the Hirakud Project, the major transmission lines operated as radial feeders to Rourkela-Joda, Bargarh and Chainpal-Chaudwar. Similarly, there is a radial feeder to Rayagarha-Brahmapur-Ganjam from Machhakund. On commissioning of the Talcher Thermal station, the inter-connected grid link was established by bringing about a connection between Talcher and Joda thus establishing the first grid operation covering Hirakud-Rourkela-Joda-Talcher-Chainpal-Hirakud. Together with this grid radial feeders also operate between Talcher-Jajpur and Chainpal-Chaudwar- Khorda. With the commissioning of the Balimela Power Station, a larger grid has been established by inter-connecting the Talcher-Hirakud grid to the Balimela and Machhakund power houses.

The following table shows the length of transmission and distribution lines existing till March 1989 in the state.

Lines		Existing in Route (km.)
E. H. T. Lines		
220 K. V.	..	2,158
132 K. V.	..	3,731
H. T. Lines		
66 K. V.	..	136
33 K. V.	..	8,093
11 K. V.	..	42,387
L. T. Lines	..	41,745

Inter-state Transmission Lines

The net work of transmission lines is inter-connected with Bihar through 220 K. V., Joda-Chandil link and 132 K. V. and Rourkela-Goelkela link. It is also inter-connected with Andhra Pradesh grid through 220 K. V., Balimela-Upper Sileru link. With a view to have inter-connection with the West Bengal grid, action has been taken for construction of 400 K. V. inter-state S. C. line from Rengali to Orissa border through Kolaghat. There is also plan to construct another 220 K. V. inter-state S. C. line from Talcher to Orissa border towards Jamshedpur. Also another inter-state D. C. line from Rourkela to Korba (Madhya Pradesh) up to Orissa border is under construction.

Electrification of Towns and Villages

As Orissa's economy is essentially agrarian and agriculture is closely associated with rural electrification, rural electrification programme has been launched on priority basis since 1970-71. By the end of March 1973 the total number of villages electrified constituted 13.5 per cent of the total number of inhabited villages of the state, benefiting about 25 per cent of rural population. By the end of March 1975 about 21.62 per cent of the total villages were electrified benefiting 38.69 per cent of the rural population. Total villages electrified was raised to 33.13 per cent by the end of March 1979 benefiting 54.63 per cent of the rural population. By the end of 1979-80, 19,476 inhabited villages and 44 towns of the state were electrified. The total villages electrified was further raised to 62.11 per cent benefiting 81.66 per cent of the rural population by March 1989. Number of villages electrified was increased to 29,186.

Electrification of Lift Irrigation Points

Constant efforts are being made by the State Electricity Board and other agencies to speed up energisation of more lift irrigation points in the state. By the end of March 1989, a total number of energised lift irrigation points had gone up to 45,922.

During 1960-61, 0.124 M. K. W. H. powers were consumed for irrigation and other agricultural purposes. In the same year different industries of the state consumed 495.620 M. K. W. H. of power. After five years, i.e., in 1965-66, power consumed for irrigation and other agricultural purposes, and for different industries stood at 1.734 M. K. W. H. and 882.202 M. K. W. H., respectively. In 1970-71, the power consumption for irrigation and other agricultural purposes, and for different industries increased to 4.855 M. K. W. H. and 1,405.379 M. K. W. H., respectively.

In the following table the figures relating to the quantities of power utilised by different categories of consumers, bulk supply to outside the state, power consumed for irrigation and other agricultural purposes and power consumed by different industries of the state from 1975-76 to 1979-80 are given.

Year	Power utilisation of different categories of consumers—bulk supply to outside the state (kWh)	Power consumed for irrigation and other agricultural purposes (MkWh)	Power consumed by different industries of the state (MkWh)
(1)	(2)	(3)	(4)
1975-76 ..	422.248	9.016	1844.496
1976-77 ..	437.244	14.712	1854.799
1977-78 ..	441.657	15.900	1988.214
1978-79 ..	347.517	34.280	1972.358
1979-80 ..	45.80	55.000	2269.470

After a decade or so, i.e., during 1988-89 the following quantities (in kw) of power were supplied to different categories of consumers:

(a) domestic-6,39,597, (b) commercial-1,45,511, (c) small industries, medium industries, and large & heavy industries-20,655, (d) power-intensive industries-413, (e) railway traction-10, (f) irrigation & agriculture-33,661, (g) public water works-993, (h) public lighting-3,812, (i) bulk supply-502, (j) private licences-1 and (k) other consumers-5.

Mining

The state is endowed with a wide varieties of valuable ores and minerals. About 80 per cent of the state's area is occupied by "Archaeans", the oldest rock of the earth's crust. "Vindhyaans" containing the limestone deposits of Sambalpur and western part of Koraput districts, Gondwana formations which contain the two large coal fields of the state viz., Talcher and Ib valley, tertiary beds in parts of Mayurbhanj and Baleshwar districts, quarternary and recent formations comprising laterite alluvium, beach sands and soil make up the remaining area of the state.

Coal was the first mineral to be discovered in the state. It was first located in Talcher area in 1837. The coal fields of the area were opened in 1919. The coal field of the Ib valley was discovered in 1854-56, but work started in 1909. Iron-ore deposits of the Bihar-Orissa iron belt which runs along the northern border of Orissa was first discovered in the Mayurbhanj ex-state area in 1904.

Today the state possesses about one-third of the total resources of iron-ore and manganese ore, 95 per cent of the reserves of chromite, 60 per cent of the reserves of bauxite, 20 per cent of the reserves of dolomite and the major portion of the graphite resources of India. The country's only known commercially workable deposits of nickel ore occur in Sukinda valley of Cuttack district. The beach sands near Gopalpur-on-sea contain ilmenite, sillimanite, rutile, monazite, silicon, etc., in economic concentrations. Extensive deposits of flux and cement grade limestone occur in Sundargarh, Sambalpur and Koraput districts. The other important mineral resources of the state include vanadium bearing magnetite, copper ore, lead ore, fireclay, china-clay, quartzite, kyanite, mica, beryl, felspar, soapstone, pyrophyllite and tin-ore. A variety of rocks suitable for use as building and decorative stones occur in different parts of the state. The 1985 status of resources of different ores and minerals was as follows :

	M (in million tonnes)	Grade
Iron-ore ..	3,120	+58% iron
Manganese-ore ..	31	+28% mn.
Chromite ..	130	+30% Cr ₂ O ₃
Coal ..	25,000	Non-cooking
Bauxite ..	1,525	+40% Al ₂ O ₃
Limestone ..	850	..
Dolomite ..	475	..

Fireclay	..	59	..
China-clay	..	35	..
Nickle ore	..	155	+0.5% Ni
Lead ore	..	2.6	5% b
Copper ore	..	3.0	1.5 Cu
Quartz and Quartzite		25	+97% SiO ₂
Mineral sands	..	45	—
Vanadium-ore	..	2.0	1% V ₂ O ₅

Assessment of resources of other minerals and ores in the state is under progress. The total value of minerals produced annually in the state is of the order of Rs.211 crores. The aggregate production of all minerals and ore in 1985 was 18.4 million tonnes.

The statement given below indicates name of minerals, number of mines operated, mines under public sector, number of persons employed and name of big mines with persons employed there during 1985.

Minerals	No. of Mines	Mines under public sector	No. of persons employed	Name of the big mines	Persons employed in big mines
(1)	(2)	(3)	(4)	(5)	(6)
Iron-ore ..	54	13	12,418	Barsuan-Kalta	2,041
Manganese-ore ..	26	5	6,348	Siljora-Kalimati	605
Iron & Manganese-ore	32	7	..	..	..
Chromite ..	14	8	4,178	Bhiamtangar	445
Coal ..	13	13	11,592	Jagannath Colliery	908
Limestone ..	26	4	12,681	Biramitrapur	6,714
China-clay ..	9	1	291	Joshiapur	63
Quartz and Quartzite	32	..	428	Nuapara	51
Graphite ..	40	..	1,315	Raju-Nagphena	309
Fireclay ..	33	3	698	Talbasta	90

Number of workers employed in different mines of the state was 52,000 during 1986.

Most of the mines of the state except some collieries in the Ib valley and Talcher coal fields resort to opencast mining. Some of the mines are fully mechanised whereas others are either semi-mechanised or manually worked.

The following table gives the details of different minerals produced during the last six years ending 1985 (quantities in lakh tonnes)

Minerals	1980	1981	1982	1983	1984	1985
Iron-ore ..	68.68	63.07	60.69	56.67	66.03	71.30
Manganese-ore ..	5.68	4.58	5.49	4.61	4.35	4.23
Lead-ore ..	0.09	0.08	0.07	0.43	0.66	0.72
Chromite ..	2.64	2.89	2.84	2.85	4.00	4.92
Coal ..	30.43	31.56	34.85	38.18	51.01	57.24
Limestone ..	26.51	29.58	31.05	28.54	28.77	32.17
Dolomite ..	7.65	6.33	6.44	7.86	9.10	9.40
Quartz ..	0.31	0.52	0.32	0.38	0.38	0.54
Quartzite ..	0.23	0.26	0.17	0.16	0.26	0.29
Fireclay ..	1.06	1.19	1.29	1.13	0.91	1.23
Soapstone ..	..	0.01	0.01	0.01	0.02	0.02
Chinaclay ..	0.21	0.14	0.22	0.22	0.28	0.34
Silica sand ..	..	..	..	0.01	..	..
Graphite ..	0.41	0.46	0.38	0.28	0.29	0.30
Bauxite ..	..	..	..	..	0.40	0.82

Maximum quantity of iron-ore, manganese and chromite expected in any particular year are 2.8 million tonnes, 1,36,000 tonnes and 3,37,000 tonnes respectively. During 1985-86 export of iron-ore, manganese-ore and chromite amounted to 1,868 million tonnes, 3,000 tonnes 1,66 000 tonnes respectively.

Quantity (in lakh tonnes) of minerals despatched from mines for export to countries from 1981 to 1985 is given below.

	1980	1981	1982	1983	1984	1985
Iron-ore ..	12.14	10.07	8.35	6.87	8.57	14.30
Manganese-ore ..	0.06	0.12	0.09	0.09	0.08	0.30
Chromite ..	1.20	1.20	0.58	0.62	0.72	2.42

Promising indication are available about economic concentrations of gold and tin-ore in the Koraput and Kendujhar districts respectively. There are also promising zones for occurrence of oil in the off-shore and on-shore areas of the state.

Most of the large industries of the state are mineral-based. These include one iron and steel plant, two ferro-manganese plants, one ferro-chrome plant, one low shaft pig iron plant, one ferro-silicon and silicon metal plant, two cement plants, four refractory plants, one glass factory, one thermal power plant and one coal-based fertiliser plant. These industries have been discussed in the subsequent paragraphs.

The different organisations now involved in exploration and assessment of mineral resources of the state include the Directorate of Mines, Orissa; Geological Survey of India; Indian Bureau of Mines; Atomic Mineral Division; Orissa Mining Corporation; Mineral Exploration Corporation; Oil and Natural Gas Commission; Oil India; CMPDI; SAIL and Tata Iron and Steel Company Ltd.

The statement given below indicates mining revenue including agency fees from 1980-81 to 1985-86 of the state.

Year	In lakhs of rupees
1980-81	534.09
1981-82	653.06
1982-83	691.63
1983-84	725.34
1984-85	785.35
1985-86	967.73

Industries at present

The present industries of the state can be divided into three categories, such as, (a) large industries, (b) medium industries and (c) small and cottage industries. A detailed discussion about these industries finds mention in the following paragraphs.

Large and Medium Industries

Industries like iron and steel, cement, ferro-chrome, fertiliser plant, ferro-manganese, steel rolling mills, galvanised pipe factory, aero-engine factory, cotton-textile, ceramic, paper, glass, aluminium, refractories, sugar, caustic soda, salt and chemicals, etc., are included in these categories. During 1981-82 the state had 29 large industries under production and 26 large industries under implementation. Number of medium industries in the state was 130 of which 63 were under production and the rest under implementation (1980-81).

Iron and Steel

There is an ore-based steel plant at Rourkela managed by the Steel Authority of India Ltd. The construction of plant started in October 1956 in collaboration with the Federal Republic of Germany. The plant went into production in 1958. The plant which has been established under the Central sector gets raw materials and power at minimum cost. It has the advantage of being barely 80 km., away from the rich iron-ore deposits. Manganese-ore and limestone deposits are even closer. Water is supplied from the river Brahmani which is about 2 km. away from the plant. Washed coal for the Plant mainly comes from Dugda, Bhojudih, Patherdih and Kargali. Kargali Plant's quarries at Purunapani and Satna supply limestone and manganese-ore, and dolomite is brought mainly from the nearby mines within the state. The Orissa State Electricity Board supplies power to the plant as well as to the city of Rourkela from

the Hirakud Hydro-Electric Project and the Talcher Thermal Power Station. The unique feature of the plant is the adoption of L.D. process of steel making. The main units are coke ovens and by-products plant, blast furnaces, steel-making shop and rolling mills. A capital of Rs.764 crores has been invested in this undertaking. The utilised capacities of the plant at present (1981-82) are 18,00,000 tonnes of ingot steel and 12,25,000 tonnes of saleable steel per annum. Some of the items of production of the undertaking are galvanised sheets, high silicon steel for electrical machineries and electrolytic tin plates. The plant is specialised in production of steel sheets for ship building. The plant had employed 39,676 persons by 1981-82

The year-wise production figures (in tonnes) of the plant from 1979-80 to 1981-82 are given in the following statement.

Year	Plates (Plates Mill)	H. R. Coils	H. R. Sheets and plates	H. R. Si. sheets	C. R. coils
(1)	(2)	(3)	(4)	(5)	(6)
1979-80	2,62,687	1,65,401	80,986	17,576	86,148
1980-81	2,63,899	1,54,380	67,863	19,457	89,141
1981-82	2,80,675	2,43,559	91,697	20,971	73,850

Year	C.R. sheets and black plates	Galvanised sheets	Tin plates	E. R. W. pipes	S. P. W. pipes
(1)	(7)	(8)	(9)	(10)	(11)
1979-80	72,701	1,60,346	54,432	51,080	43,141
1980-81	54,255	1,27,661	31,695	30,374	41,573
1981-82	55,344	1,48,783	38,878	38,663	40,868

The other iron industry of the state is located at Barbil in Kendujhar district. The Kalinga Iron Works, as the undertaking has been named, was established in the private sector. It was taken over by the Industrial Development Corporation of Orissa on the 1st April, 1963. The plant at present produces 100,000 tonnes of foundry-grade pig iron per annum by three low shaft furnaces. The capital investment of the plant is Rs. 861 lakhs (1981-82). The undertaking has employed 855 persons.

There is a proposal to establish one steel plant of three million tonnes capacity per year at Daitari in Cuttack district for which Bhoomi Puja ceremony was held at Jakhapura on 10th May, 1992.

Cement

There are two cement factories in the state located at Rajgangpur in Sundargarh district and Baragarh in Sambalpur district.

The factory at Rajgangpur, named as the Orissa Cement Ltd., was established in pursuance of an agreement in December 1948, between the state of Orissa and M/s Dalmia Jain Agencies Ltd. The production of the factory started in 1951. Subsequently, a refractory plant was also added to the cement factory. The annual installed capacity of this industrial complex is 4,01,001 tonnes of portland and pozzolana cement, 1,20,909 tonnes of high quality fireclay, silica, burnt basic and chemically bonded refractories, and 35,268 tonnes of span R. C. C. pipes, prestressed concrete products, etc. The capital investment of this undertaking is Rs. 1,647.29 lakhs. The complex has employed 2,893 persons (1981-82).

The other cement factory named 'The Hira Cement Works' was set up at Bardol near Baragarh by the Industrial Development Corporation of Orissa. The construction of the factory was taken up during the early parts of 1964 and production started in 1968. The factory which utilises the limestone of Dungri quarry, manufactures portland cement. The plant's capital investment is Rs. 933 lakhs and the undertaking has employed 987 persons (1981-82).

Ferro-Manganese

The state has two ferro-manganese plants located at Joda in Kendujhar district and Rayagarha in Koraput district. Both the plants are ore-based. These plants get power from the Hirakud and Machhakund Hydro-electric Projects and are well-served by railways.

The plant at Joda was taken over by the Tata Iron and Steel Co. Ltd., in 1957. The plant supplies ferro-manganese for the TISCO's own plant at Jamshedpur. The capital investment of the undertaking which has employed 463 persons is rupees 260 lakhs. Its production during 1978-79 was 35,130 tonnes.

The second factory of the state was established at Rayagarha by the Jeypore Sugar Co. Ltd., in 1958. The undertaking produces about 2,000 tonnes of ferro-manganese. There are 279 persons employed in this factory by 1979.

Fertiliser

There are four fertiliser plants in the state located at Rourkela and Kalunga in Sundargarh district, Talcher in Dhenkanal district and Paradeep in Cuttack district. This apart, the Indian Farmers and Fertilisers Corporation, Baragarh produces mixed fertiliser.

The fertiliser plant of Rourkela which is a public sector undertaking went into production in 1958. The capital investment of the plant is rupees 2,729 lakhs. The plant utilizes the surplus gas from the steel plant. The plant also utilizes the limestone fines from Purunapani. In terms of calcium ammonium nitrate, the plant has a rated capacity to produce 5,60,000 tonnes. A further quantity of about 20,000 tonnes of ammonium sulphate is produced annually in the by-product plant.

The Orissa Fertiliser and Chemicals Ltd., Rourkela, established a fertiliser plant near Kalunga with a capacity of 45,000 tonnes per annum. The raw materials of the plant consist of imported rock phosphate, basic slag and sulphuric acid. The capital investment of the plant which started production in 1973 is rupees 75 lakhs. The undertaking has employed 500 persons.

The fertiliser plant at Talcher started production in 1980 with the rated capacity of 495 thousand tonnes of urea and 228 thousand tonnes of nitrogen. This coal-based plant has employed about 2,000 persons. Besides fertiliser, the plant also produces liquid oxygen and nitrogen.

The Indian Farmers and Fertilisers Corporation, Baragarh, produces mixed fertiliser. The Corporation has invested a sum of Rs. 36 lakhs and has employed 110 persons (1981-82).

These apart, a phosphatic fertiliser complex at Paradeep has been built as a joint venture of the Government of India and the Island Republic of Nauru. It was built in two phases. The first phase, which was commissioned on 26th February, 1986 is formed by di-ammonium phosphate plant of capacity 2,400 tonnes per day (7.2 lakh tonnes per annum). The second phase comprises a phosphoric acid plant of capacity 750 tonnes of P_2O_5 per day (2.25 lakh tonnes per annum), sulphuric acid plant of capacity 2,000 tonnes per day (6.6 lakh tonnes per annum) and captive power plants of capacity 32 megawatt. The sulphuric acid plant started production in October 1990 and captive power plants functioned from November-December 1990. The total cost of the project, which has employed 875 persons including 487 non-supervisory staff by 1st July, 1991, was Rs. 630.82 crores.

Aeronautical Industry

There is an aero-engine factory at Sunabeda in Koraput district. The factory has been established in the public sector by the Government of India in collaboration with the then U. S. S. R. The factory has provided employment to 3517 persons (1981-82).

Aluminium

The National Aluminium Co. Ltd., the largest producer of alumina and aluminium in India, was established with the French collaboration. The Company started operation in the bauxite mines

at Panchpatmali in November 1985 followed by Alumina plant at Damanjodi (both in Koraput district), smelter at Anugul and power plant at Anugul (in Dhenkanal district) in a phased manner during the period from 1986 to 1989. The sale of metal started from 23rd May, 1989. The project was taken up at an estimated cost of Rs. 2,408 crores. The manpower strength of the Company as on 30th December, 1991 was 5465.

Another aluminium Plant has been established at Hirakud in the Sambalpur district with Canadian collaboration to produce aluminium ingots, sheets, circles, extrusions, rods, powder, paste, pyro-technic powder, filter cakes, etc. The plant which went into production in 1959 has employed 820 persons. The capital investment of the plant is rupees 760 lakhs. The installed capacity of this smelter is 20,000 tonnes.

Two factories, viz., the Aluminium Industries and the Hira Cable Plant are also located there which take advantage of the aluminium smelter. The Aluminium Industries started production in 1959. This undertaking has been established with a capital investment of rupees 176 lakhs and has employed 185 persons. The Hira Cable Plant which went into production in 1965 has employed 352 persons. The capital investment of the factory is rupees 236 lakhs. Both the factories produce aluminium conductors.

Paper

The state has three paper mills located at Brajarajnagar in Sambalpur district, Choudwar in Cuttack district and Rayagarha in Koraput district. The first paper mill was started in the state at Brajarajnagar in 1939. The present (1981-82) investment of the factory which has engaged 4,980 persons, is rupees 1,619.63 lakhs. This factory produces both paper and paper board. The main raw material is bamboo, which the mill collects from the forests of the state. The second paper mill of the state was set up at Rayagarha at a cost of rupees 6.5 crores and production started in 1962. The mill has provided employment to 2,298 persons. Paper is being manufactured in this mill from bamboos available in the leased forests located in south Orissa. The third plant which produces paper, pulp and alum is located at Choudwar. The mill went into production in 1960. Like the other two mills, this plant also depends on bamboo as the chief raw material for production of paper.

Sugar

The three sugar factories * of the state are located at the Rayagarha in Koraput district, Asika in Ganjam district and Baragarh in Sambalpur district. These three factories went into production in 1937, 1954 and 1971 respectively. The sugar factory at Rayagarha has

*Two more sugar factories have been established at Nayagarh in the Puri district and Baramba in Cuttack district.

provided employment to 180 persons (1979-80) and its capital investment is rupees 87 lakhs. The crushing capacity of the factory was 150 tons per day at the time of construction and it has since increased to 600 tons per day. The sugar factory at Asika with a capital investment of rupees 75.74 lakhs has employed 750 persons. The cost of construction of the sugar factory at Baragarh was rupees 220 lakhs with daily average crushing capacity of 1,250 tons.

Ferro-silicon

A Ferro-silicon plant has been established at Theruveli, about 20 km., away from Rayagarha in Koraput district. The plant with an installed capacity of 7,500 tonnes per annum has provided employment to 436 persons (1981-82). Its capital investment is rupees 557 lakhs. Ferro-silicon is an essential ferrous alloy in the manufacturing of alloy steel. The production of the plant started in 1967. One plant has also been established at Theruveli for production of silicon carbide. The capital investment of the plant which has provided employment to 429 persons is rupees 519 lakhs.

Cotton Textiles

A textile mill was established at Chaudwar in Cuttack district in 1949 with 50,000 spindles and 864 looms. The mill has an annual production capacity of 4,50,000 metres of cloth and 61,00,000 kg. of saleable yarn. The capital investment of the mill which has provided employment to about 5,000 persons is rupees 362 lakhs. This is a market-based mill. This apart, there are spinning mills at Bhagatpur in Cuttack district, Jharsuguda and Tora in the district of Sambalpur, Govindpur in Dhenkanal district and Rajgangpur in Sundargarh district. The annual capacity of the spinning mill at Jharsuguda is 65,000 kg. This mill with a capital investment of rupees 320 lakhs has provided employment to 3,528 persons (1981-82). The cotton mill at Bhagatpur has 29,500 spindles and has given employment to 715 persons. The cotton mills at Tora and Rajgangpur have 10,000 spindles each.

Mineral Sand

The Indian Rare Earth Ltd., (Orissa Sand Complex) has been established at Aryapalli (Chhatrapur) in Ganjam district to produce different sand minerals like ilmenite, rutile, zircon, sillimanite, monazite and synthetic rutile and has given employment to 1,116 person of whom 496 belong to the skilled category. The total cost of construction and capital investment is Rs. 183 crores. The factory started commercial production from October 1986,

A district-wise list of large and medium industries, both under production and implementation in the state up to 1980-81 showing as far as possible the line of production, investment and employment is given in Appendix II.

Small-scale and Cottage Industries

Development of small industries has been stressed upon by the State Government since the inception of the Second Five-Year Plan. Industrial Estate Programme started in right earnest towards the end of that plan with an objective of establishing local industrial centres in important places in the districts. Supply of ready-made factory sheds was the direct incentive to the entrepreneurs to set up small-scale industries in the industrial estates.

Pilot Project Scheme

With a view to creating industrial climate and attract new entrepreneurs the Pilot Project Scheme was formulated in the state during 1958-59. The aim of the scheme was that once a particular industrial project having viable prospect was selected for implementation and private entrepreneurs having requisite know-how, managerial skill and experience in such industry were available, the Government agreed to provide requisite funds in the ratio of 90 :10 of the equity share participation with the entrepreneur. The scheme further envisaged that the private entrepreneur would gradually purchase Government shares in a period of time and take over ownership of the firm eventually. During the Second Five-Year Plan period 40 pilot project companies dealing mainly with cast iron, light engineering and fabrications, chemical and ceramic industries, fruit preservation and carpentry units were incorporated under the scheme. Due to various difficulties like marketing, mismanagement, the aim of the scheme could not be fulfilled. Consequently, almost all the pilot project companies landed in failure. Out of the 40 units, 9 have been transferred to private entrepreneurs and three are working at present. The other units are either liquidated or closed. Total investment under the scheme was Rs. 79,44,345 of which the Government invested Rs. 63,52,550. During 1979-80, the pilot project companies which employed 270 workers, produced goods worth Rs. 43 lakhs.

Rural Industries Project

Since 1962 the Rural Industries Project is in operation in the state as a Central sector scheme. The Government of India provided full financial assistance for the scheme which is being executed by the State Government. In the first stage one project each started functioning at Jajpur of Cuttack district and Barpali in Sambalpur district. The area of operation of

* By the end of 1991 some of the industries under production were closed and a number of units under implementation along with some new industries started production.

these two projects subsequently extended to cover the entire districts of Cuttack and Sambalpur excluding the towns having population over 25,000. In the second phase two more projects, one each for the districts of Balangir and Kalahandi were allotted by the Central Government. These two projects started functioning in 1973. Eight small industrial units in the Cuttack Rural Industrial Project and four small industrial units in the Sambalpur Rural Industrial Project were functioning during 1977-78. These apart, one industrial unit each was organised in the Rural Industrial Projects of Balangir and Kalahandi districts. The project authorities also supplied a number of small industries schemes to entrepreneurs, prepared feasibility reports for a number of small-scale industries, organised exhibitions, rendered technical guidance, supplied raw materials to the existing units, assisted number of units in the installation of machineries, rendered marketing assistance to a number of units, arranged loan from commercial banks for a number of small industries units and supplied hand tools to a number of village artisans.

Panchayat Industries Programme

To provide employment and for effective utilisation of local skill, raw materials and other resources in rural areas, the Panchayat Industries Programme was launched during 1961-62. Panchayat Samiti Industry is a small-scale industry set up as an industrial co-operative. Panchayat Samitis were allowed to play the role of entrepreneurs instead of setting up departmental units by the Government. Under this programme, 48 units were sanctioned during 1962-63. Thereafter, 25 training-cum-production centres were converted into Panchayat Samiti units. Under the prize winning Grama Panchayat Scheme, 49 Panchayat Samiti Industry units were sanctioned during 1964-65. It was originally proposed to set up 142 such units but 122 units were actually commissioned. Agricultural processing industries like crystal sugar units, rice hullers, oil-mills, etc., and industries meant to provide house building materials like Mangalore tile units, carpentry units, blacksmithy units for manufacture of agricultural implements, cold storage, lime manufacturing units, stone crushing units, etc., were set up under the Panchayat Industries Programme. Out of the 122 Panchayat Industry units, one unit has been sold, two units each have been transferred to the Registrar of Co-operative Societies, Orissa and the Grama Panchayats; six units were leased out, 25 units are defunct and the remaining 86 units are working at present (1981-82). Out of the working units, 73 are running on profit and 13 have been revitalised with an investment of rupees seven lakhs. By the end of 1981-82, the State Government have

invested Rs.74,24,000 under the programme. These industries which have employed 2,000 persons produced goods worth Rs. 1 crore during the above period.

Incentives to educated unemployed and in backward districts to start industries

Towards 1970, the Central Government offered additional doses of incentives to educated unemployed for setting up their own industries. With the object of developing the backward districts through industrial development, the Central Government also assisted the State Government in providing outright grant of subsidy at the rate of 15 per cent rebate in income-tax, concessional finance and some other incentives to the industries to be located in these areas. The State Government also provided further supplementary incentives to the industries located in the backward areas. The Government of India declared Kalahandi, Mayurbhanj, Kendujhar, Dhenkanal, Koraput, Baleshwar, Balangir and Phulabani as the industrially backward districts of the state.

Growth Centre Campaign

Since 1974-75 growth centre campaigns and special drive are being conducted to promote at least 1,000 industries every year in the state. Up to 1976-77 about 3,000 entrepreneurs were mobilised out of whom 699 parties set up small-scale units in different districts. These units created production capacity worth Rs. 17.06 crores with a total capital investment of Rs. 504 lakhs. Industrial finance to the tune of Rs. 212 lakhs was invested in these units with employment opportunity for 5,186 persons. There were 886 new small-scale units promoted in the state with total investment of Rs. 686.29 lakhs during 1977-78. These units offered employment for 6,163 persons.

District Industries Centres

There was adequate tuning in organisational structure in the industries administration by way of setting up of District Industries Centres which were to act as the nodal point for assisting the entrepreneurs in supplying all services and supports required for promotion, establishment and follow up action in respect of small and village sectors under one roof. The range of functions of the District Industries Centre covers economic investigations of a district, raw materials, credit facilities and effective marketing assistance with common facilities for quality control. The other function of the District Industries Centre is to establish close linkage with development departments of the Government and financing agencies, etc. Since the 1st July, 1978 each of the districts of the state has been provided with a District Industries Centre. The Government have delegated adequate powers to these

centres on issue of (a) registration of small-scale industries, (b) production certificate, (c) allotment of raw materials, (d) allotment of land in the industrial estates, (e) schemes/projects reports, (f) powers for sanction of loans, subsidy, etc., under Rural Industries Project, (g) import licence, (h) lease of forests and quarries and other special concessions. These centres are maintaining close links with the Director of Export Promotion and Marketing, Orissa; Khadi and Village Industries Board, Orissa; State Co-operative Handicraft Corporation, IPICOL, etc., for promoting small, village and cottage industries. The District Industries Centres have shown good physical achievements since their inception. Assistance provided by all the District Industries Centres to the small-scale industries units from 1978-79 to 1986-87 is given below:

Sl. No.	Small-scale Industries Units	1978-79	1979-80	1980-81
(1)	(2)	(3)	(4)	(5)
1	Number of entrepreneurs identified	5,616	8,932	9,671
2	Number of schemes/project profiles prepared/up-dated	2,563	4,118	5,021
3	(a) Number of units provisionally registered	3,967	5,637	7,050
	(b) Number of units permanently registered	1,174	1,591	1,886
4	Number of units gone into production	1,372	2,020	2,003
5	Investment on item 4 above—			
	(a) Block capital (Rs. in lakhs)	498.36	584.22	881.25
	(b) Working Capital (Rs. in lakhs)	223.65	402.43	429.27
6	Employment on item 4 above	8,787	13,255	14,844

Sl. No.	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87
(6)	(7)	(8)	(9)	(10)	(11)	
1	15,627	16,230	9,067	9,787	9,096	7,020
2	5,438	6,419	7,158	4,238	4,153	3,842
3 (a)	10,102	10,078	9,067	9,787	8,634	6,742
(b)	1,689	1,329	1,102	1,024	1,073	955
4	2,600	3,180	3,333	3,220	3,482	2,518
5 (a)	1,268.73	1,931.28	2,804.43	2,895.48	3,302.38	2,704.08
(b)	626.29	716.94	1,121.65	876.79	1,337.72	1,802.73
6	17,951	22,716	26,779	24,003	23,424	16,977

The identification of backward areas on the basis of criteria adopted by the Central Government are not appropriate to the Orissa's economic condition where the whole state can be taken as industrially backward. The State Government's industrial policy of 1980, therefore, aimed at bringing in an uninterrupted and spontaneous growth in industrial development both in organised and small-scale sectors. State investment subsidy to the tune of 15 per cent of the fixed assets were made available to the entrepreneurs setting up their units even in the forward districts.

The number, investment and employment of small-scale industries established in the state up to 1986-87 (yearwise) are as follows:

Year			Number of Small-scale Industries Units	Investment (In lakhs of Rs.)	Employment generated
(1)			(2)	(3)	(4)
Till	1973-74	..	2,776	2,966.46	32,030
	1974-75	..	621	425.69	4,967
	1975-76	..	745	505.34	5,410
	1976-77	..	699	603.12	5,186
	1977-78	..	886	686.27	6,163
	1978-79	..	1,372	722.01	8,787
	1979-80	..	2,020	986.65	13,255
	1980-81	..	2,003	1,310.52	14,844
	1981-82	..	2,600	1,895.02	17,951
	1982-83	..	3,180	2,648.22	22,716
	1983-84	..	3,333	3,926.08	26,779
	1984-85	..	3,202	3,572.27	24,003
	1985-86	..	3,482	4,640.10	23,424
	1986-87	..	2,513	4,506.81	16,977

From the above table it is observed that 29,432 small-scale industries with the capital investment of Rs. 29,394.56 lakhs were established in the state by 1986-87. These industries provided employment to 2,22,492 persons.

The District Industries Centres have successfully identified the rural artisans, craftsmen and other weaker sections of the community who are languishing with acute poverty in spite of their skill. The training programme, distribution of tools, kits and provision of loan at concessional rate have been able to provide silver line to the artisan sector.

Ancillary industries

In the small-scale sector, the State Government have given stress to the growth of ancillary and auxillary industries in and around the gigantic industrial projects coming up both in central and state sectors. In addition, the State Government have programmed for establishment of different industries complexes in important growth centres in order to give a boost to the development of engineering, electrical, electronic, chemical, plastic, drugs and pharmaceuticals, and other sophisticated categories of industrial products. By the end of 1979, ancillary industries numbering 161 were set up in Rourkela, Sunabeda, Paradeep and Gopalpur. These units executed orders worth Rs. 4.76 crores in that year.

The various tables indicating the category-wise industrial growth along with the figures of investment and employment which have been given in Appendix III would show the progress made in the small-scale sector.

Handicrafts

Handicrafts of the state have earned reputation in and outside the country. The popular crafts like applique work of Pipili (Puri district), particularly its garden umbrella and canopies; *patachitra* and papier-mache works of Puri, silver filigree jewellery, golden grass mats of Cuttack, tie and dye sarees of Sambalpur, and Nuapatna (of Cuttack district), Dhokra and clay toys of Mayurbhanj, Kendujhar and Cuttack (Baramba) districts; hornwork of Cuttack and Paralakhemundi (Ganjam district); flexible brass fish of Ganjam; lacquer work of Nabarangapur (Koraput district), stone and wood-carving of Lalitagiri (Cuttack district), Bhubaneshwar and Puri (Puri district), brass and bell-metal work of Balakati and Kantilo of Puri district; and Dhenkanal and Ganjam districts; and wooden painted toys of Cuttack and Puri districts have earned fame for the state. About 40,000 artisan families are engaged in different handicrafts. Fifty-one types of crafts have been identified so far in organised and unorganised sectors. About 8,500 families have been brought under co-operative fold, co-operative societies numbering 221 (1981-82) have been organised in the state for economic benefits of the

artisans. The state level Orissa Co-operative Handicrafts Corporation and the Orissa Non-ferrous Metal Industries Corporation were organised for marketing of goods produced by the handicrafts artisans. The state level Orissa Co-operative Handicrafts Corporation has been amalgamated with the Orissa Non-ferrous Metal Industries Corporation with new nomenclature "Orissa State Co-operative Handicrafts Corporation" since 1984-85.

As in the country, the traditional society of the state was caste-based and village occupations were caste-specific. The rural artisans and craftsmen belonged to the caste system and a particular craft was practised by a particular caste hereditarily. The artisan castes of the state like Sankhari (bangle-maker), Mali (florist), Kumbhar (potter), Kansari (brazier), Sutradhar (carpenter), Swarnakar (goldsmith) and Chitrakar (painter) were mainly depending on their respective craft for livelihood. The designs, colours and forms depicted in craft products confirm the folk art and crafts of Orissa with special reference to the cultural heritage of the state and represent gradual evolution of the art and craft products through disciplined efforts of generations of craftsmen.

The State Government have formulated a number of development schemes for providing assistance through co-operative societies in term of share capital, investments, management subsidy, interest subsidy, rebate on sale of handicraft goods and grants to voluntary organisations to undertake training schemes. Massive training programmes on handicrafts have been taken up in the districts to widen the production base of handicrafts and to provide opportunity for self-employment in rural areas. During 1981-82, 96 handicraft training institutions (one state level Institute of Handicrafts Training Centre, 26 district level handicrafts training centres and crafts schools, and 69 master craftsman centres) in 31 types of crafts were functioning throughout the state to train up 1,578 boys and girls every year. Also training in woolen carpet weaving has been introduced in the districts of Ganjam and Balangir to widen employment prospects in new crafts. Further, training centre in Moradabad-type brass art wares has been established at Balakati in Puri district to ensure product change for traditional brass and bell-metal workers.

The State Handicrafts Design Centre and Production Centre has been functioning to evolve new designs on handicrafts and reproduce the same for extension services to co-operatives and artisan handicraft units.

The popular crafts such as applique and filigree works, Pata-paintings, papier-mache, Dhokra, wood and stone carvings of the state are being exported to United States of America, countries forming former Union of Soviet Socialist Republic, Australia, Germany, France, Iran and Japan. Selected handicraft articles are being displayed in the state handicraft show house at Bhubaneswar to attract artists, visitors, traders and exporters.

The craftsmen are also supplied with improved tools and implements at the District Industries Centre level to update their technology to increase productivity and reduce cost of production of goods to ensure better earnings.

During the 6th Five-Year Plan period the total outlay had been approved for Rs. 186 lakhs for strengthening the financial base of handicrafts co-operatives in providing share capital, managerial subsidy, interest subsidy and rebate on sales. During 1980-81 and 1981-82, the State Government had made, provisions of Rs. 29.16 lakhs and Rs. 39 lakhs respectively for handicrafts development schemes. In 1981-82, the functioning handicraft co-operative societies produced goods worth Rs. 210 lakhs and provided employment to 15,000 persons. During this year also 28,492 artisan units under the small-scale sector were established with an investment of Rs. 2.89 crores, offering employment to 47,861 persons.

The Orissa Co-operative Handicrafts Corporation

The Orissa Co-operative Handicrafts Corporation is an apex organisation. This Corporation was established at Bhubaneswar in 1959 with a share capital of Rs. 50,000. The share capital stood at Rs. 33 lakhs during 1981-82. The main objective of the Corporation is to create marketing avenue for handicrafts, popularisation of such products among the buyers and thereby confer economic benefit on the craftsmen engaged in production. Apart from marketing the products of artisans, it supplies raw materials and sometimes takes up the training programme under different crafts whenever grants are received from the Government. During 1978-79, 1979-80 and 1980-81, the Corporation procured goods worth Rs. 29.47, Rs. 37.97 and Rs. 38.14 lakhs respectively. During these years, the progress of sales turnover was at Rs. 34.94, Rs. 53.49 and Rs. 47.00 (till 1st May, 1981) lakhs respectively. The Corporation also exported different handicrafts. The handicrafts are disposed of by the Corporation through its chain of sales emporiums known as 'Utkalika' located at Bhubaneswar, New Delhi, Cuttack, Puri, Rourkela, Sambalpur, Jaypur (Koraput district) and Bhubaneswar Air-port. During 1982, it opened an emporium at Calcutta jointly with the State Handloom Development Corporation. Since 1984-85 this Corporation has been renamed as the Orissa State Co-operative Handicrafts Corporation.

Orissa Non-ferrous Metal Industries Corporation

This Corporation was registered in 1975 with the objective of developing industrial co-operative societies, procure and supply of raw materials, and production and marketing of goods manufactured by these societies. The headquarters of the Corporation was located at Bhubaneshwar. By 1977-78, there were 32 member societies under the Corporation. During this year Rs. 50,000 was given as grant-in-aid to the Corporation by the State Government. The Corporation purchased 27,832 tonnes of raw materials and distributed 27,500 tonnes among the member societies during this year. In 1984-85 the Corporation merged with the Orissa State Co-operative Handicrafts Corporation.

Salt

The vast saline tract in the coastal districts of Cuttack, Baleshwar, Puri and Ganjam has presented opportunity for manufacture of salt. A survey conducted by the Regional Research Laboratory, Bhubaneshwar, jointly with the Central Salt and Chemical Research Institute, Bhavanagar, in late seventies of this century indicates that the state has an additional 46,000 acres of potential area which can be developed and can employ 92,000 worker-families. The major potential areas have been identified in Chudamani-Kaithkola belt of Baleshwar district, Tua and Gumbai of Puri district, and Palur, Surla and Sumandi area of Ganjam district. The annual output of salt is near about 60,000 tonnes. By 1977-78 the area brought under salt production under public, private and co-operative sectors was only 7,300 acres. 7,641 acres were utilised for salt production in the state during 1981-82, out of which 2,156 acres were in co-operative fold. There were seven salt co-operative societies functioning in the state. The Orissa Maritime and Chilika Area Development Corporation has also taken up salt production. The employment potential in the sector was nearly 16,000 of which 7,000 were working under salt co-operative societies. Domestic consumption of salt in the state is estimated to be about one lakh tonnes and the requirement for industrial use is nearly another one lakh tonnes. The quantities of salt produced were 86,255 tonnes including 17,494 tonnes of salt co-operative societies during 1976-77 and 36,568 tonnes including 11,719 tonnes of salt co-operative societies during 1977-78. The salt co-operative societies had produced 7,000 tonnes of salt during 1981-82.

Coir

The coastal districts of the state hold out good promise for development of coir-based industries thereby promoting employment opportunity in rural areas. The coir co-operatives in the state are engaged in the production of coir fibre yarn, ropes, mats, door-mats, etc.

During 1975-76, there were 18 coir co-operative societies in the state. This number increased to 19 in the following year. In 1977-78, only 7 of these 19 co-operative societies were actually working. The coir products of these societies were valued at Rs. 82,645. During 1981-82 the state had 25 coir co-operative societies. These societies which provided employment to 800 families produced goods worth of Rs. 2.50 lakhs. The State Government provided Rs. 7.66 lakhs and Rs. 8 lakhs during 1980-81 and 1981-82 respectively for development of coir industries in Orissa. In order to provide marketing facilities for coir products, central coir marketing society has been organised at the state level. The marketing society provides raw materials to the coir co-operative societies at Bhubaneswar. In the Sakhigopal coir complex, two units, i. e., rope making and dehusking, have gone into production.

The State Coir Training and Design Centre has been established at Teisipur in Puri district by the Government. This apart, three training-cum-demonstration centres in the coastal districts, and one training centre at Kendujhar district are also functioning for making available trained hands for effective utilisation of raw materials in rural areas.

Handloom and Powerloom

The handloom is the biggest industry which provides employment to a large number of artisans. The state has immense potential for improving the living standard of the poor section of rural people under this sector. In Orissa, there are 31 lakhs of weavers and 1.05 lakhs of handlooms. The number of handlooms in the co-operative fold is 56,027. But hardly 30,000 looms under the co-operative fold are working.

Up to the Fifth Five-Year Plan period, nearly 500 weavers' co-operative societies were organised in the state out of which only 150 societies were working. 300 co-operative societies died at the infant stage because of non-supply of inputs, poor supervision and bad management. During the above plan period the assistance provided to the weavers' co-operative societies mainly comprised share capital loan, working capital loan, loan and subsidy to the societies, interest on share/working capital loans, managerial subsidy, rebate on sale of handloom cloth, supply of improved appliances and training of weavers in weavers' service centre. A sum of Rs. 18 lakhs was provided during the above plan period for the purpose.

In the Sixth Five-Year Plan period, handloom sector was accorded high priority in view of its high employment potential and the prospect of improving the economic condition

of the weavers belonging to the weaker sections of the community. The schemes formulated in this sector are intended to give full-time employment to 79,000 weavers, cater to the export market in a big way, increase the productivity of weavers and thereby increase their wages and to meet the consumers requirement by supplying improved variety of handloom fabrics. During this plan period it has been decided to bring 40,000 more looms to active operation. In addition to this, one Handloom Development Corporation has been established to take care of 10,000 weavers who are outside the co-operative fold.

Till the end of December 1981 (in the year 1981-82), 7,500 looms were set up and 7,000 looms were modernised in the state. Production of cloth in organised sector and total turnover by apex societies during 1980-81 and 1981-82 (up to the end of December 1981) are given below :

	1980-81	1981-82
1. Production of cloth in organised sector	257 lakhs sq. metres valued at Rs. 11.70 crores.	226 lakhs sq. metres valued at Rs. 11.50 crores.
2. Total turnover by apex societies	Rs. 13.25 crores	Rs. 12.00 crores

The total outlay of the Fifth Plan period was nearly Rs. 84 lakhs whereas the outlay of the Sixth Plan period was Rs. 750 lakhs.

The progress in the co-operative fold of handloom sector from 1974-75 to 1979-80 is indicated in the following statement :

Sl. No.	Handlooms in co-operative sector	1974-75	1975-76	1976-77
(1)	(2)	(3)	(4)	(5)
1. Number of working Weavers' Co-operative Societies		181	181	201
2. Membership ..		38,349	38,349	40,093
3. Working looms ..		9,900	9,900	14,900
4. Production in lakhs of metres		51.22	48.02	60.65
5. Production in value (Rs. in lakhs)		243.53	256.61	349.78

Sl. No.	Handlooms in co-operative sector	1977-78	1978-79	1979-80
(1)	(2)	(6)	(7)	(8)
1. Number of working Weavers' Co-operative Societies		250	289	337
2. Membership ..		45,503	50,000	55,000
3. Working looms ..		21,300	25,518	30,000
4. Production in lakhs of metres		65.70	143.33	216.00
5. Production in value (Rs. in lakhs)		381.19	419.06	974.00

Sericulture

Sericulture means silk culture. Tussar silk culture is being practised in the state since the beginning of this century. Eri silk worm culture is also being practised here since the days of the Non-Co-operation Movement. The mulberry silk worm culture has been introduced recently. The tussar silk industry got the royal patronage in the ex-states of Mayurbhanj and Kendujhar. Matha fabrics are very famous both inside and outside the state. Late Bhikari Charan Patnaik was the pioneer of the Eri silk industry which flourished under his patronage. The collection of tussar cocoons during the early part of the forties was about 2,000 Kahanas.

At present the tussar industry has made sizeable progress in every respect. This industry is mostly confined to the districts of Mayurbhanj, Kendujhar and Sundargarh, and partly to the districts of Cuttack, Dhenkanal, Baleswar, Sambalpur, Balangir, Kalahandi, Koraput and Ganjam. The Eri industry is confined to the districts of Cuttack, Puri, Ganjam, Sundargarh, Phulabani and Koraput. The mulberry silk industry has been initiated in the districts of Koraput, Phulabani and Ganjam.

All the three varieties of culture are done by the State Tussar Co-operative Society Limited. This industry provides full-time employment to about 25,000 people and part-time employment to

another 5000 people most of whom reside in forest areas, hill tracks and villages. The State Government is spending rupees one crore every year for the development of the industry. By the end of December 1980, there were 48 tussar rearing co-operative societies, apart from one apex co-operative society in the state. The number of tussar rearing co-operative societies increased to 61 by the end of 1981 and the total membership was 30,692. These co-operative societies supply raw materials in shape of cocoons and yarn for weaving of silk fabrics. The annual production of tussar, Eri and mulberry cocoons is of the order of 30,000 *kahans*, 5,000 kg., and 1,000 kg., respectively. In 1981-82 (up to the end of December 1981), the collection figures were 5,527 *kahans* of tussar cocoons valued at Rs. 10.37 lakhs, and 680 kg. of Eri cocoons. Generally, exportable varieties of fabrics like coating, shirting, furnishing materials, etc., are prepared and exported to countries like Germany, the United States of America, France, Italy and the United Kingdom. The volume of export is of the order of 5 lakh sq. metres. The manufacture and export of these fabrics are entirely in the hands of private entrepreneurs.

Leather

The state has a large live-stock population and sufficient number of hides are collected every year. Collection and processing of hides provide employment opportunities for the weaker sections of the community. There are 10,000 cobbler families concentrated in different areas of the state. A leather corporation has been formed to look after the development of the leather industry in the state on the cottage and small-scale sector. By the end of October 1981 the corporation had either organised or reorganised 20 co-operative societies with 766 members for collection of hides. 16,000 pieces of hides worth Rs. 5.50 lakhs had been collected. There are four leather manufacturing units located at Titilagarh (Balangir district), Boudh (Phulabani district), Rourkela (Sundargarh district) and Cuttack, and three common service centres located at Puri, Brahmapur (Ganjam district) and Sundargarh which are controlled by the Corporation. The tannery at Titilagarh produces both chrome tanned and V T. leather (E. I. Kips) whereas the Boudh Tannery produces V.T. sole leather and cow leather. The shoe factory at Cuttack manufactures ammunition boots, industrial and mines safety boots and other requirement of different Government departments. The Industrial Leather Products Division at Rourkela produces leather hand gloves. Production of civilian footwears has been taken up in all the three common service centres. In different units and in the head office of the Corporation about 300 persons are working.

The production figures of the different manufacturing units of the Corporation for 1975-76 and 1976-77 are given below :

Sl. No.	Production in Manufacturing Units	1975-76	1976-77
(1)	(2)	(3)	(4)
1	(a) Collection of Hides	No. 35,112	No. 26,317
	(b) Value ..	Rs. 4,70,308.00	Rs. 6,50,318.34
2	Production of Leather		
	(a) Crust leather ..	41,926 kg.	27,180 kg.
	Value ..	..	Rs. 5,00,580.00
	(b) Chrome leather ..	1,37,248 sq. ft.	1,16,780 sq. ft.
	Value ..	Rs. 9,57,541.00	Rs. 3,37,676.00
	(c) Sole leather ..	38,726 kg.	34,282 kg.
	Value ..	Rs. 4,79,031.00	Rs. 5,74,734.00
3	Value of production of leather goods	Rs. 11,93,904.00	Rs. 14,53,776.75

During 1981-82 the shoe factory at Cuttack produced 13,882 pairs of footwear and 5,222 number of other leather goods. The Leather Production Division at Rourkela produced 39,726 pairs of industrial hand gloves. The Titilagarh Tannery produced crust leather of 21,862 kg. and chrome leather of 10,951 sq. ft. The tannery at Boudh produced 32,635 kg. of sole leather.

Orissa Khadi and Village Industries Board

The traditional rural artisan needs better know-how, provisions of funds and equipments. He also needs scarce raw materials and the goods, to which he cannot market himself, should, find a market through organised means. The Orissa Khadi and Village Industries Board has been organised since 1956 to provide and ensure these requirements of the rural artisans. The Khadi and Village Industries Commission provides funds through the Khadi and Village Industries Board of the state to assist both artisan with traditional craft and able-bodied householders interested in spinning.

The Khadi and Village Industries Board continued to receive all kinds of support from the Government so that it becomes as more effective as well as dynamic in the task of setting up village and cottage industries with more emphasis on leather, soap, bee-keeping, Khadi and village potteries, etc., in which income, and employment can be generated for rural people with relatively

less investment of capital. Industry-wise production figures of the Board from 1978-79 to 1980-81 are given in the following statement:

Name of the Industry (1)	Production value (Rs.)		
	1978-79 (2)	1979-80 (3)	1980-81 (4)
1. Bee-keeping ..	7,99,130·00	11,83,000·00	13,48,230·00
2. Processing of cereals and pulses	10,24,946·00	13,04,163·00	25,37,081·00
3. Village oil ..	10,49,800·00	15,63,375·00	20,39,438·00
4. Village leather	7,17,792·00	17,67,570·00	32,56,659·00
5. Village pottery	7,92,675·00	8,81,855·00	19,41,921·00
6. Gur and .. Khandasari	1,12,47,900·00	2,58,04,700·00	3,06,94,775·00
7. Carpentry and blacksmithy	12,72,947·00	16,09,094·00	33,25,339·00
8. Village fibre ..	49,98,225·00	72,94,138·00	85,31,166·00
9. Palm Gur ..	29,45,322·00	34,87,170·00	52,95,735·00
10. Non-edible oil and soap	59,80,016·00	89,44,298·00	95,70,902·00
11. Cane and bamboo	2,27,364·00	3,65,296·00	5,90,593·00
12. Lime manu- facturing	5,85,240·00	5,97,368·00	6,32,979·00
13. Cottage match ..	62,954·00	2,81,124·00	1,07,322·00
14. Collection of forest plants and herbs for medical purposes	10,85,372·00	11,10,545·00	20,88,351·00
15. Hand-made paper	29,808·00	..	5,336·00
16. Gums and resins	2,39,193·00	9,06,532·00	10,45,607·00
17. Shellac ..	2,31,796·00	58,752·00	1,14,245·00
18. Khadi ..	1,94,407·00	1,74,707·00	4,15,251·00
19. Food processing and preservation	..	..	11,455·00
Total ..	3,34,57,887·00	5,73,35,687·00	7,35,52,387·00

The Khadi and Village Industries Commission is the main source of finance, in addition to loans provided by some commercial banks on interest subsidy scheme for the development of village industries in the state. The Commission's finance was supplemented with the grant-in-aid received from the State Government from time to time.

The Khadi and Village Industries Board finances mostly the industrial co-operative societies and some institutions. In 1976-77, the number of co-operative societies and institutions financed was 1,125 which rose to 1,358 in 1977-78. Individuals financed numbered 925 in 1976-77 and 1,392 in 1977-78. During 1980-81 there were 1,553 industrial co-operative societies in the state out of which 350 co-operative societies were functioning, 387 did not start production and the remaining 816 were either defunct or under liquidation.

Production and employment in Khadi and Village industries between 1971-72 and 1975-76 rose from Rs. 281.63 lakhs to Rs. 481.14 lakhs (71%) and Rs. 0.46 lakhs to Rs. 0.50 lakhs (8%), respectively. During the 1979-80 the Khadi and Village Industries Commission provided an amount of Rs. 19.08 lakhs as grant and Rs. 158.22 lakhs as loan to the Orissa Khadi and Village Industries Board. Out of this they actually released Rs. 134 lakhs as loan and 18 lakhs as grant. The production of the Board this year was of the value of Rs. 5,73,35,687.00. This year the Board provided employment to 51,454 persons. The next year the Khadi and Village Industries Commission allotted a sum of Rs. 27.35 lakhs under grant and Rs. 177.94 lakhs under loan for the development of Khadi and Village industries in the state of which a sum of Rs. 22.64 lakhs as grant and Rs. 171.91 lakhs as loan was made available. This year production under the Khadi and Village Industries Board was of the value of Rs. 7,35,52,387.60. The Board provided employment to 65,085 persons.

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Industrial Estates

During the Second Five Year Plan period a programme for construction of industrial estates was taken up in the state to boost up activities in the small-scale sector. At first, five industrial estates were built in different parts of the state. Since then the number has gradually increased. By January 1981 the state had 27 industrial estates with 622 sheds located at Cuttack, Chaudwar, Jagatpur (two estates), Kendraparha and Paradeep (all in Cuttack district); Bhubaneshwar and Mancheswar (all in Puri district); Brahmapur and Paralakhemundi (all in Ganjam district); Talcher, Mahispat, Korian and Anugul (all in Dhenkanal district); Rourkela (two estates) and Kalunga (all in Sundargarh district); Jaypur and Sunabeda (all in Koraput district); Takatpur (Mayurbhanj district); Barbil and Kendujhar (all in Kendujhar district); Balangir (Balangir district); Kesinga (Kalahandi district); Sambalpur and Jharsuguda (all in Sambalpur district) and Baleswar (Baleswar district).

Tourist Industry

The account will not be complete if no mention is made of the tourist industries of the state. Orissa's Golden Triangle embracing the magnificent monuments of Bhubaneswar, Puri, and Konarka, luxuriant beaches, lush green forests with enchanting flora and fauna, and the fascinating Chilika lake attract tourists from far and near. To exploit the state's wealth in tourism, Rs. 325 lakhs were provided in the Sixth Five-Year Plan. To promote tourism, two travel circuits have been identified. These are: (a) Bhubaneswar-Puri-Konarka-Dhauli-Ratnagiri-Lalitagiri - Udayagiri-Bhadrak - Chandipur-Khiching-Jashipur (Similipal)-Bhubaneswar and (b) Bhubaneswar-Chilika Lake-Gopalpur-on-sea-Taptapani-Koraput-Balangir-Sambalpur-Anugul (Tikarparha)-Bhubaneswar. Attempts are being made for development of infrastructure along these routes. The marine drive which considerably reduced the distance between Puri and Konarka passes through some of the charming landscapes of the state. The construction of the road was completed in 1982. To attract foreign and Indian tourists of high, middle and low spending groups hotels, motels and cottages have been planned. Hotel has been declared as an industry enabling it to avail of all incentives in the Industrial Policy of 1980. Some important hotels like the Railway Hotel at Puri and the I. T. D. C. Hotel of Kalinga-Ashoka at Bhubaneswar, are expanded. The Orissa Tourism Development Corporation runs a chain of middle level hotels known as Pantha Nivas in different places of the state. Some firms internationally famous for hotel managements have been permitted to establish hotels in the state. A tourist village on the marine drive has also been planned. To attract foreign tourists the state headquarters, Bhubaneswar has been linked directly by air with Delhi, Calcutta Hyderabad, Bombay, Madras and some other places of tourist importance. The Orissa Tourism Development Corporation has acquired luxury buses of which some are air-conditioned for sight-seeing tours of the visitors. The number of international tourists in the state increased from 18,970 in 1978 to 23,041 in 1980. The number of domestic tourists also went up from 1,85,735 in 1978 to 2,81,614 in 1980.

Industrial Corporations

A number of corporations have been formed to organise and promote industries in the state. This apart, a Financial Corporation of the state has been established to provide finance to small and medium-scale industries. The Industrial Promotion and Investment Corporation of Orissa provides financial assistance to industries. There are also a Mining Development Corporation and a Tourism Development Corporation. All the corporations are the undertakings of the Government of Orissa.

The Industrial Development Corporation of Orissa Ltd.

The Industrial Development Corporation Limited was incorporated on 29th March, 1962 with an authorised capital of Rs. 50 crores. The headquarters of the Corporation is at Bhubaneswar. This Corporation, which is one of the largest organisations in the state sector, plays a significant and active role in rapid industrialisation of Orissa. Its role includes promotion, establishment and management of heavy and medium scale industries and to aid, assist and finance any industrial undertaking with capital for execution of its work/business which is likely to promote industrial development and accelerate the pace of industrial growth of the state.

The Corporation managed eight industrial units (1981) of its own. These were the Kalinga Iron Works at Barbil (Kendujhar district), Hira Cement Works at Baragarh (Sambalpur district), Ferro-chrome plant at Jajpur Road (Cuttack district), Tile Factory at Chaudwar (Cuttack district), Hirakud Industrial Works, Hira Cable Works and Re-rolling Mill at Hirakud (Sambalpur district). Besides, there was a subsidiary company by the name of the East Coast Salt and Chemical Industries at Sumandi (Ganjam district). The industrial complexes covered a wide and varied range of products like cement, ferro-chrome pig iron, rolled steel products, aluminium conductors, winding wires and strips, transmission line towers, tiles and salt. These were brought into commercial production between 1969 and 1970. The capital investment up to 1980 in these projects amounted to Rs. 45 crores including Rs. 22 crores in shape of paid up capital. Around 4,000 persons were directly employed in these projects.

The Corporation has also set up a jute mill named the Konarka Jute Limited in the district of Cuttack as a joint venture in collaboration with the National Agricultural Co-operative Marketing Federation of India Ltd., New Delhi. This mill started commercial production in 1979. With major investment by the Corporation and in collaboration with a private entrepreneur another unit, viz., East Coast Breweries and Distilleries Ltd. has been set up near the Paradeep port. The unit started commercial production in 1979. The Corporation earned a net profit of Rs. 381.18 lakhs during 1980-81 and Rs. 318.41 lakhs by the end of 1981.

By the end of the 1991 two of the directly managed units viz., the Tile Factory at Chaudwar and the East Coast Salt and Chemical Industries at Sumandi were closed. Two new industries, viz., the Spun pipe plant, Barbil and the Boiler piping and Accessories Works,

Bhubaneshwar, started production during March 1982 and April 1983 respectively. Besides, the following two subsidiary units and two companies under joint sector/venture were also established.

(A) Subsidiary Companies

(1) ABS Spinning Orissa Limited

(i) Baripada Spinning Mill, Baripada in the district of Mayurbhanj (production started during March 1983)

(ii) Asika Spinning Mill, Asika in the district of Ganjam (production started during March 1987)

(iii) Sonapur Spinning Mill, Sonapur, in the district of Balangir (production started during March 1983)

(2) ORICHEM Limited, Talcher in the district of Dhenkanal (production started since May 1982)

(B) Joint Sector/Joint Venture Companies

(i) Nicce Industries Ltd., Baripada in the district of Mayurbhanj (production started in November 1983)

(ii) S. N. Corporation Ltd., Dhenkanal (production started in 1985)

The Corporation also assisted three companies, viz., the Jaya-shree Chemicals Ltd., Ganjam the Aska Co-operative Sugar Industries Ltd., Asika in the district of Ganjam and the Ananda Industries Gasses Ltd., Bhubaneshwar investing Rs. 20.30 lakhs, Rs. 3.00 lakhs and Rs. 1.50 lakhs respectively in their equity capital.

The authorised capital of the Corporation upto the end of 1991 was Rs. 75.00 crores. Through its units, subsidiaries and joint sector projects, the corporation had provided direct employment to about 9500 persons and also around 3300 persons were employed through contractors.

Industrial Promotion and Investment Corporation of Orissa Ltd.

The Industrial Promotion and Investment Corporation of Orissa is the pioneer promotional body of the state for setting up large and medium industries. The Corporation with its headquarters at Bhubaneshwar was established in 1973-74. The authorised capital of the corporation is Rs. 5 crores divided into five lakhs equity shares of Rs. 100.00 each. Its main function lies, in rendering promotional assistance to large and medium-scale industries in the shape of management consultancy, equity participation, sanction of various kinds of internal credit like term

loan, soft loan, etc., and incentives and concessions for such industries in accordance with the provisions of the new industrial policy (1980) along with such other assistance as is sought for by the entrepreneurs. The Industrial Co-ordination Bureau operating as a consultancy wing of the Corporation is in charge of clearing various problems of the entrepreneurs right from the preparation of feasibility reports up to arrangement of infrastructural assistance required for industrial projects.

Among the industrial projects promoted by the Corporation 29 units were (1981-82) under production. Total capital investment made in these projects was of the order of Rs. 15.70 crores with an employment potential for 2,836 persons. The Corporation had also taken up implementation of about 70 industrial projects involving a total capital investment of nearly Rs. 136 crores and an employment potential of 7,648 persons. Besides, it identified 196 new projects along with their entrepreneurs to be taken up with a total capital investment of Rs. 865.90 crores and employment potential of over 40,000 persons. The units assisted by the Corporation are set up for various types of products like cement sheets, steel casting, fabrication, vegetable oils, sea food, wheat products, soft drinks, yarn, jute twine, paper, watch, cycle tyres, ferro-alloys, cutting tools, railway sleepers, motor cycle assembly, chemicals, wine, etc.

Orissa State Financial Corporation

The Orissa State Financial Corporation was established in 1956 under the State Financial Corporation Act, 1951 with the main object of providing institutional credit, both medium and long term to the small and medium-scale industrial concerns for construction of factory buildings, purchase of plants and machineries, renovation and modernisation of existing plants and machineries. The head office of the Corporation is located at Cuttack. The Corporation as a developmental bank and promotional agency, operates various schemes of liberalised assistance like technician entrepreneur scheme, soft loan scheme, assistance to educated unemployed persons, scheme for self-employment of medical graduates, composite loan scheme, small loan scheme, scheme for small hotels in semi-urban areas, scheme for hotel-cum-guest house, and seed capital loan scheme. Besides, the Corporation is also the disbursement agency for central investment subsidy.

The assistance of the Corporation in the early stage was confined mainly to traditional industries like rice-mills, oil-mills, saw-mills, etc. But since the second part of 1970 several new schemes and programmes have been introduced and procedures

liberalised for providing financial assistance to different industrial concerns engaged or proposed to be engaged in the manufacture, preservation or processing of goods, mining, hotel industry, transport of passenger or goods by road or water or by air, generation or distribution of electricity or any other form of power; the maintenance, repair, testing or servicing of machinery of any description or vehicles or vessels or motor boats or trawlers or tractors; assembling, repairing or packing of any article with the aid of machinery or power; the development of any contiguous area of land as an industrial estate; fishing or providing shore facilities for fishing or maintenance thereof or providing special or technical knowledge or other services for the promotion of industrial growth.

Types of assistance provided by the Corporation are; granting direct loans, underwriting the shares and debentures, subscribing directly to the shares and debentures out of its share capital, guaranteeing loans, guaranteeing deferred payments in respect of capital goods purchased and facilitating availability of foreign exchange for import of plant and machinery under the World Bank Line of Credit.

The authorised share capital of the corporation is Rs. 1,000 lakhs. The issues and paid up share capital which were Rs. 300 lakhs and Rs. 266 lakhs respectively during 1979-80 increased to Rs. 784.145 lakhs and Rs. 700.145 lakhs respectively by the end of 1980-81. This year the Corporation received refinance assistance of Rs. 972.49 lakhs and Rs. 357.50 lakhs by way of floating of bonds. Since its inception up to the end of 1980-81, the Corporation accorded sanction of Rs. 8,543.25 lakhs to 13,790 industrial units whereas it disbursed Rs. 5,006.64 lakhs in favour of 5,930 units.

The recovery in respect of principal up to the 31st March, 1981 was Rs. 1,018.86 lakhs, and Rs. 969.80 lakhs in respect of interest. Term loan outstanding on the above date amounted to Rs. 3,987.87 lakhs.

The achievements of the Corporation year-wise from 1977-78 to 1980-81 are given below.

Year	Sanction		Disbursement		Recovery
	No.	Amount (Rs. in lakhs)	No.	Amount (Rs. in lakhs)	Amount (Rs. in lakhs)
(1)	(2)	(3)	(4)	(5)	(6)
1977-78 ..	425	542.44	273	337.89	107.99
1978-79 ..	1,260	1,258.94	515	524.21	242.48
1979-80 ..	3,179	1,640.96	1,989	1,073.08	405.63
1980-81 ..	7,564	2,937.33	2,263	1,763.13	611.91

During 1980-81 the Corporation earned a profit of Rs. 38,37,111.87 subject to the provision for taxation. The net profit amounted to Rs. 16,75,103.97.

Orissa Industrial Infrastructure Development Corporation

The Orissa Industrial Infrastructure Development Corporation has been established with head office at Bhubaneswar since 1980 to provide various facilities to all categories of industries in a composite manner. The functions of the Corporation are generally to promote and assist in the rapid and orderly establishment growth and development of industries, trade and commerce in the state; establish and manage industrial sheds at different places, develop industrial areas and make them available for various industries; undertake execution of different types of work relating to industries on agency basis, provide amenities and common facilities in industrial sheds and industrial areas; construct buildings for the housing of employees of various industries and make available buildings on hire or sale to industries.

To achieve these objectives a total of forty-nine growth centres in the state have been identified for systematic promotion of industries. Besides, fourteen industrial areas have been identified for locating medium and major industries. During the Sixth Five-Year Plan period, the State Government proposed allocation of Rs. 7 crores for the Corporation to be used as margin money to raise loans to the tune of an additional Rs. 14 crores. The Corporation proposes to take up construction of industrial sheds on an extensive scale.

Film Development Corporation of Orissa Ltd.

The Film Development Corporation of Orissa Ltd., has been incorporated on 2nd April, 1976 in accordance with the Companies Act, 1956 with a share capital of Rs. 5 lakhs. The headquarters of the Corporation is located at Cuttack. The aims and objectives of the Corporation are extending financial assistance and guarantee to private entrepreneurs for construction of low-cost Janata cinema houses in rural and semi-urban areas of the state; to set up good cinema houses in important places like Cuttack, Bhubaneswar, Rourkela, etc., to augment its own resources; to set up a studio and laboratory, dubbing, editing and music recording complex; making available outdoor shooting and recording equipment; payment of subsidy to producers for promotion of Oriya films; extending financial assistance to producers for promotion of feature films in Oriya; compulsory screening of Oriya films, holding of children's film festival and regional film festival.

The Corporation so far (1982) has established a film studio complex* at Bhubaneshwar. It has taken steps to construct its own cinema house at Cuttack, provided loans for construction of low-cost cinema houses, sanctioned subsidies to five producers of Oriya films, apart from sanctioning soft loans in favour of 21 producers of Oriya films and organising regional film festivals. Besides, necessary steps have been taken for legislative amendments making it obligatory on the part of the cinema houses to exhibit Oriya films for minimum period of six weeks in a year.

The Orissa Small Industries Corporation Ltd.

The Orissa Small Industries Corporation Ltd., with headquarters at Cuttack was incorporated in 1972. The Corporation has an authorised capital of Rs.4 crores and share capital of Rs.3,06,82,400.00. The Corporation was formed with the main objectives of aiding, assisting, counselling and promoting small-scale industries in the state and to provide essential inputs. After formation of the Orissa Industrial Infrastructure Development Corporation and the Orissa Electronic Development Corporation, the present activities of the Corporation have been limited to the following.

Procurement and distribution of raw materials, consultancy services, subsidy for feasibility reports, equity participation in joint sector projects, revival of sick industrial units, marketing assistance, and export promotion, and management of its own industrial units.

The Konarka Television Unit which went into commercial production in 1974 in technical collaboration with the H.A.L., was managed by the Corporation till the unit was transferred to the Orissa Electronic Development Corporation established in 1981-82.

The following statement deals with the business and financial performance figures of the Corporation during 1978-79 to 1981-82.

	1978-79	1979-80	1980-81	1981-82
Raw materials				
(a) Quantity sold (tonnes)	6,584	12,648	13,352	14,364
(b) Turnover value (Rs. in lakhs)	203	516	534	607
Marketing				
Value (Rs. in lakhs)	9.92	1.22	37.65	164.00
Consultancy				
(a) Entrepreneurs Assisted (No.)	418	368	372	476
(b) Schemes supplied (No.)	140	169	215	148

*A colour laboratory has also been established in the studio

	1978-79	1979-80	1980-81	1981-82
Commercial Units				
(a) Konarka Television, Bhubaneswar				
(i) Number of Sets sold	8,350	10,422	10,910	..
(ii) Value (Rs. in lakhs)	172.00	215.88	293.00	..
(b) Rehabilitation Industries Unit				
Sales Turnover (Rs. in lakhs)	15.58	18.53	13.84	20.35
(c) General Engineering and Scientific Works, Brahmapur				
Sales Turnover (Rs. in lakhs)	0.87	4.15	3.58	3.39

Orissa State Handloom Development Corporation

The Orissa State Handloom Development Corporation was established in 1977 to look after the development of weavers outside the co-operative fold. The authorised capital of the corporation is Rs. 3.00 lakhs and its headquarters is located at Bhubaneswar. The equity capital advanced by the State Government from 1976-77 to 1981-82 comes to Rs. 202.37 lakhs. Besides, the Corporation received the Government loan of Rs.18.43 lakhs in 1978-79 and Rs.3.37 lakhs in 1980-81, composite loan of Rs. 45.96 lakhs from the Orissa Finance Corporation and advances of Rs. 88.71 lakhs from 1977-78 to 1980-81 from different banks. Two centrally sponsored projects, viz., the Intensive Handloom Development Project and the Handloom Export Production Project are being implemented by the Corporation since its inception. Under the Intensive Handloom Development Project 6,980 looms went into production producing cloth valued Rs. 175.77 lakhs during 1979-80. There were 783 looms under the Handloom Export Production Project at Jagatsinghapur, Nuapatna, Barpali, Hinjilikatu and Khorda and cloth worth Rs.56.92 lakhs were exported during the year mentioned above. The Corporation has also undertaken the development programmes like modernisation of traditional looms, training of weavers in use of modern and time-saving appliances, introduction of new designs, providing pre and post-weaving facilities, supply of raw materials and marketing of finished products. The Corporation has set up a Janata cloth-production centre covering the districts of Baleswar, Mayurbhanj and Kendujhar with a target to cover 5000 looms and to provide employment to 10,000 weavers. During the period 1977-78 to 1981-82 the Corporation established 67 production centres, identified 13,665 looms, brought 12,169 looms under production, modernised 9,339 looms and provided training to 1280 weavers. During this

period, 131 lakh metres of fabrics valued at Rs. 535.13 lakhs were sold. Production of Janata cloth came to 106.2 lakh metres valued at Rs. 355.78 lakhs and sale came to 9.70 lakh metres valued at Rs. 303.05 lakhs.

Orissa Agro-Industries Corporation

The Orissa Agro-Industries Corporation started functioning from 1968 as a division of the Orissa Small and Agro-Industries Corporation. Subsequently, the Small and Agro-Industries Corporation separated itself from its small-scale industries activity and was renamed as the Orissa Agro-Industries Corporation Ltd. The authorised capital of the Corporation is Rs. 500 lakhs and paid up capital is Rs. 23.39 lakhs. The head office of the Corporation is at Cuttack. Its main object is to act as the technological arm of the agricultural effort in the state and provide the main inputs to the farming community, besides assisting in the mechanisation of agriculture. The Corporation also aids, assists, promotes and develops fishery, poultry, sheep and cattle.

The physical target and achievements of the Corporation during five years ending on 31st March, 1982 are furnished below :

Year	Target fixed (Rs. in lakhs)	Achievements made (Rs. in Lakhs)
1977-78	220.00	131.00
1978-79	445.00	238.00
1979-80	761.00	496.00
1980-81	1123.00	700.00
1981-82	1025.05	651.13

The working results of the Corporation for the three years ending on 31st March, 1982 are indicated below :

Year	Turnover (Rs. in lakhs)	Profit/Loss (+) (—)
1979-80	496.00	(+) 11.00
1980-81	700.00	(+) 13.23
1981-82	651.13	(+) 5.77

The Corporation is under the administrative control of the Agriculture Department of the State Government.

Orissa Electronic Development Corporation Ltd.

The Orissa Electronic Development Corporation was set up in 1981-82 to promote electronic industries in the state. The Corporation with its head office at Bhubaneshwar has indentified 8 large

and medium electronic industries. The total investment in these industries will be about Rs. 30 crores. One industrial estate for electronic industries has been planned. The Konarka Television unit located at Bhubaneshwar was managed by the Corporation for sometime.

The Leather Corporation of Orissa Ltd.

The Leather Corporation was formed in 1976 with the objectives of manufacture and sale of leather footwears and other leather goods. The Corporation is also working for protecting and promoting the interest of leather industry in the state in small-scale and cottage sector. The headquarters of the Corporation is located at Cuttack.

The Corporation functions (1981-82) with an authorised capital of Rs. 1 crore. Its subscribed and paid up capital is Rs. 90.58 lakhs. The State Bank of India has sanctioned a credit limit of Rs. 30 lakhs for purchase of raw materials. This apart, the Canara Bank and the Andhra Bank have sanctioned Rs. 6 lakhs and Rs. 4 lakhs respectively for the shoe factories and the tanneries.

In 1977 the Corporation took over from the State Government the tanneries of Titilagarh and Boudh, the shoe factory of Cuttack and the Industrial Leather Product Division of Rourkela. Two footwear units have been started at Cuttack and Rourkela by the Corporation. Besides, the Corporation also manages common service centres at Brahmapur and Puri where production of civilian footwear has been taken up.

The Corporation has taken up programme for the development of leather industry in small-scale and cottage sector. Under the auspices of the Khadi and Village Industries Board, 119 co-operative societies were organised which subsequently became moribund. The Corporation proposes to implement its programmes through these societies by activating them and also by promoting small entrepreneurs. Twenty co-operative societies with 766 members have been organised/reorganised for hide collection and 10 artisan co-operative societies with 500 members have been identified for taking of regular production of footwear and other leather goods. Three of these co-operative societies with 82 members have already been assisted under the programme. The Corporation has arranged shops at Bhubaneshwar, Rourkela and Sambalpur, and opened raw material banks at Cuttack, Titilagarh, Boudh and Puri. Steps are being taken to organise such banks at Rourkela and Sambalpur. The Corporation is also working for upgrading the leather technology of the state by opening design development centre and organising refresher's course, and study tour. It has also taken steps to conduct the techno-economic survey of the artisans engaged in leather industry to improve their condition.

Orissa Mining Corporation Ltd.

The Orissa Mining Corporation was established in 1956 with the objectives of production, transport and sales of different minerals, viz., iron, manganese, chrome, china-clay, apart from exploration in different lease hold areas. The production and sale of different ores during 1981-82 were as follows :

Minerals/Ore	Production (in lakh tonnes)	Sales (in lakh tonnes)	Value (Rs. in lakhs)
Iron-ore,	10.07	11.93	728.47
Manganese-ore	0.88	0.81	110.71
Chrome-ore	0.94	0.95	709.32
			<hr/> 1,548.50 <hr/>

The Corporation has also produced 600 tonnes of china-clay from the Dumaria China-clay mines in the district of Mayurbhanj.

The present (1982) capital base of the Corporation is Rs. 20 crores authorised capital against which the State Government have already subscribed Rs. 993.62 lakhs. The financial position is steadily improving from 1977-78 when the Corporation was able to completely wipe out the carry-over loss of Rs. 588.18 lakhs continuing for a long time. The financial results of the Corporation for the last five years ending 1981-82 are indicated below :

Year	Gross Turnover (Rs. in lakhs)	Profit (Rs. in lakhs)
1977-78	1,214.44	37.34
1978-79	1,378.11	5.20
1979-80	1,818.38	38.08
1980-81	1,331.15	6.02
1981-82	1,618.54	27.37

The Corporation has made substantial progress for the establishment of 50,000 tonnes per year charge chrome plant at Bamunipal* in Kendujhar district. The total outlay of the project has been estimated at Rs. 34.55 crores. Works have been started for (a) exploration and mining of gem-stone in Balangir and other districts, and (b) exploration and mining of tin in the Kendujhar district. There is also a proposal for exploration and mining of bauxite in the Gandhamardan range of Balangir district by the Corporation.

The headquarters of the Corporation is located at Bhubaneswar.

*The plant was sold to a private party in 1991 as it incurred loss.

Orissa Tourism Development Corporation Ltd.

The Tourism Development Corporation of Orissa has been incorporated on 3rd September, 1979, under the Indian Companies Act, 1956 with the main objective of creating suitable infrastructure for all-round and integrated development of tourism in the state.

The Corporation has an authorised capital of Rs. 2 crores. The paid share capital was Rs. 83.31 lakhs by March 1982. The Corporation took over the management of all the 12 Panthanivas and transport units of the Department of Tourism, Government of Orissa, from the 1st September, 1980. The Corporation has organised restaurants in all the Panthanivas. The luxury buses of the Corporation are used for sight-seeing tours to different places of tourist interest like Puri, Konarka, Pipili, Nandankanan, Dhauli, Barkul, Cuttack and Rourkela. The Corporation has its own motor launches for the tourists visiting the Chilika lake.

Financial assistance and other concessions

The Government provide a number of incentives and operate various schemes of liberalised finance to attract entrepreneurs for setting up industries in the state. Some of these incentives are discussed below.

Loans under the State-aid to Industries Act

Loans under the State-aid to Industries Act are sanctioned for the establishment of new small-scale industries and also for expansion of existing ones. The General Managers, District Industries Centres have been empowered to sanction loan up to Rs. 30,000. On the recommendation of the Board of Industries, the Director of Industries can sanction up to Rs. 1,00,000. Number of applications received and amount of loans sanctioned under this Act from 1975-76 to 1977-78 are given below:

Year	No. of applications dealt with	Loans sanctioned
(1)	(2)	(3)
1975-76	42	Rs. 3.21 lakhs
1976-77	48	Rs. 3.85 lakhs
1977-78	58	Rs. 5.37 lakhs

During 1978-79 a sum of Rs. 15,61,303 was sanctioned in favour of 136 parties as loan and further a sum of Rs. 10.02 lakhs was sanctioned in favour of 14 industrial co-operative societies.

Interest subsidy to the Orissa Financial Corporation

Interest subsidy is given to the small-scale industrial units through the Orissa State Financial Corporation by the State Government. This scheme enables the Corporation to charge lower rate of interest for loans granted to the entrepreneurs in the backward districts of the state for establishment of industries in the small-scale sector. During 1976-77 and 1977-78, Rs. 2 lakhs were granted as subsidy to the Orissa State Financial Corporation under the scheme.

Special Share Capital to the Orissa State Financial Corporation

A scheme to render special assistance to the technician entrepreneurs/craftsmen by the Orissa State Financial Corporation for setting up industries in the state was introduced in 1975-76. Under the scheme the Government paid a sum of Rs. 16 lakhs to the Orissa State Financial Corporation by the end of 1977-78. A sum of Rs. 15 lakhs was paid by the Government for this purpose during 1978-79 and 1979-80.

Soft Loan to the Weaker Section

For providing soft loan to the entrepreneurs having annual income between Rs. 5,000 to Rs. 8,000 a scheme was introduced in 1976-77. Under this scheme women entrepreneurs are also eligible to get such loan if the annual income of both husband and wife does not exceed Rs. 10,000. The entrepreneurs get this loan to obtain margin money for availing block capital loans from the financial institutions like the Orissa State Financial Corporation and different banks. In 1976-77 a sum of Rs. 1 lakh was sanctioned to 15 entrepreneurs and during 1977-78 a sum of Rs. 1.50 lakhs was given to 14 entrepreneurs.

Interest subsidy to the Orissa Small Industries Corporation for Seed Capital loan

The Seed Capital assistance scheme of the Government of India is confined to an industry with capital investment of Rs. 1 lakh in plant and machinery located at a place having population of less than 50,000. As most of the small-scale units in Orissa are not eligible to get benefit of the scheme the Orissa Small Industries Corporation provides seed capital loan to such industries by obtaining loans from different banks. Banks charge higher rate of interest on such loans. But the Orissa Small Industries Corporation advances loans to the small entrepreneurs on a reduced rate of interest so as to

keep the rate of interest at par with the capital seed loan of the Government of India. For compensating the losses of the Corporation and the State Government have introduced a scheme to give interest subsidy. During 1977-78, a sum of Rs. 92,000 was sanctioned as interest subsidy under the scheme.

Subsidy for project reports

Subsidy up to 75 per cent of the cost of preparation of project reports for different industries is given by the State Government through the Industrial Promotion and Investment Corporation of Orissa. During 1977-78 a sum of Rs. 4.01 lakhs was given to the Corporation for this purpose. During 1978-79 a sum of Rs. 4.49 lakhs was given to the Industrial Promotion and Investment Corporation for providing subsidy for preparation of 16 project reports and also a sum of Rs. 76,000 was paid to the Orissa Small Industries Corporation for preparation of project reports of small-scale industries.

Seed Capital loan to the Orissa Small Industries Corporation under the Central Scheme

The Orissa Small Industries Corporation is the agency through which the seed capital loan scheme is implemented. During 1977-78 the Government of India sanctioned Rs. 25 lakhs for providing margin money to small-scale industries of the state. During 1979-80 an amount of Rs. 6 lakhs was paid for providing seed capital loan to entrepreneurs.

Subsidy to the Orissa Small Industries Corporation for consultancy services and Techno-Economic Feasibility Cell

The Orissa Small Industries Corporation is maintaining consultancy cell to offer consultancy services to small-scale entrepreneurs of the state. The expenditure on this account is subsidised by the State Government. During 1976-77 and 1977-78 a sum of Rs. 80,000 was given to the Orissa Small Industries Corporation on this account whereas in the next two years i.e., 1978-79 and 1979-80 a subsidy of Rs. 50,000 per annum was paid on this account.

Exemption from Sales Tax

The industries purchasing raw materials during the initial stage of five years of their production are exempted from payment of sales tax and purchase tax. During 1976-77 and 1977-78 the Director of Industries granted production certificates to 43 and 60 units respectively to enable them to enjoy such exemption.

Power subsidy to new industries

The State Government are giving $12\frac{1}{2}$ per cent subsidy on energy charges payable by all new industries to the State Electricity Board having capital investment of Rs. 25 lakhs. Year-wise figures from 1976-77 to 1979-80 relating to the payment of subsidy and number of units benefited are given in the following table:

Year	Amount paid (Rs.)	No. of units benefited
(1)	(2)	(3)
1976-77	50,000	32
1977-78	1,50,000	117
1978-79	2,00,000	123
1979-80	2,26,000	128

Supply of Machinery on hire-purchase

The National Small Industries Corporation supplies machineries to small-scale industries on hire-purchase scheme. While three applications from the state were considered during 1977-78 by the Corporation, no small-scale unit was given machinery on hire-purchase in the previous year. In the following year one application was received by the National Industries Corporation for supply of machinery on hire-purchase scheme.

Outright grant subsidy to industries in specially backward districts

Entrepreneurs setting industries in the specially backward districts of the state are eligible for 10 to 15 per cent subsidy on their capital investment. During 1976-77 subsidy amounting to Rs. 33.93 lakhs was granted to 57 units whereas 40 units were given subsidy to the extent of Rs. 35.68 lakhs during 1977-78 under the scheme. During 1978-79, 97 units were granted this subsidy amounting to Rs. 43.38 lakhs and during 1979-80 subsidy to the extent of Rs. 73.168 lakhs was granted to 143 units.

State Investment Subsidy

The State Investment Subsidy scheme has come into force with effect from 1st April, 1977. As per the industrial policy of the state the industrial units located in the district, other than specially backward districts are allowed subsidy of 10 per cent on the fixed capital, i.e., land, building, plant and machinery. State investment subsidy amounting to Rs. 24,89,047 was provided to 136 industrial units during 1979-80.

Rent Subsidy to Industrial Estates

Educated unemployed entrepreneurs/technician entrepreneurs who have been provided with factory sheds in different industrial estates of the state are given rent subsidy for a period of four years at the rate of 100 per cent for the first year, 75 per cent for the second year, 50 per cent for the third year and 25 per cent for the last year. During 1976-77 and 1977-78 the sum sanctioned by the State Government under the scheme amounted to Rs. 70,000 and Rs. 1,49,000 respectively. In the next two years, i. e., 1978-79 and 1979-80 the State Government sanctioned Rs. 3,00,000 and Rs. 6,99,000 respectively for this purpose.

Industrial Potential of the State

Orissa is not only rich in mineral wealth, power potential and water availability, but it has also deep sea facilities. In the past, a weak infrastructure, particularly in the field of road and railway development, power generation and distribution, was mainly responsible for holding up the exploitation of Orissa's immense mineral and forest wealth. The position has changed now. The mineral and industrial zones of the state are now linked by a satisfactory network of roads like the National Highways, State Highways, Express ways, Major District Roads, etc. There has been some development in the railway communication too. The district of Koraput which was once considered one of the most inaccessible parts of the state is now connected by railway. This apart, railway lines have been opened between Sambalpur and Titilagarh, Cuttack and Paradeep, and Rourkela and Barsuan. The Jakhapura-Banspani and the Talcher-Sambalpur lines are under construction. To connect the Alumina Plant at Damanjodi, a railway link between Rayagarha and Koraput is also under construction.

The commissioning of the Paradeep port, which is also the deepest port in India, has added to the development in the field of communications. The vast mineral and forest wealth of the hinterland of the Paradeep Port and the traffic that is developing or likely to develop in the near future will combine to create a very vibrant sector in and around Paradeep.

The other attraction of starting new industries in the state is the availability of abundant power. The installed capacity of generating stations in the state has marked a gradual increase. By 1988-89 the state was producing 1349 megawatt of power.

Keeping in view the potential and the necessity for starting a number of major, medium and small-scale industries the following industrial belts and zones in the state have been identified.*

I. (a) Rourkela-Banei-Talcher-Cuttack-Paradeep belt

(b) Nayagarh-Tomaka-Daitari-Paradeep belt

II. Rourkela-Rajgangpur - Jharsuguda - Balangir - Titilagarh-Rayagarha-Koraput belt leading to Visakhapatnam Port

III. Industrial zone of Mayurbhanj district

IV. Industrial zone of Ganjam district

Each belt and zone has been selected from the point of view of availability of raw materials, power, adequate water and communication facilities. Rourkela area under the Rourkela-Banei-Talcher-Cuttack-Paradeep belt which is already industrially developed has still enormous potential. Banei is a potential site for an integrated steel plant or a pig iron complex. Talcher industrial complex is another important industrial area of the above mentioned belt. Besides the fertilizer plant, which is already under production, the complex can produce 1,68,300 tonnes of low phos haematite grade foundry pig iron. The area around the city of Cuttack can offer an excellent site for various engineering industries with export possibility through the Paradeep Port. Plenty of water is available in this area. The port of Paradeep is itself an ideal place for starting a variety of industries. Several export-oriented industries can be started here.

Under the Nayagarh-Tomaka-Daitari-Paradeep industrial belt the second steel plant of the state is going to be established soon at Daitari. In the Tomaka-Daitari-Sukinda belt an industrial complex can be developed on the basis of chromite, quartz and other minerals available in that area.

Rourkela-Rajgangpur-Jharsuguda-Balangir-Titilagarh-Rayagarha-Koraput industrial belt has a tremendous potential for both metallurgical and chemical industries. Cement grade lime stones in plenty are available in the belt. Apart from the two cement factories

*Industrial potential of Orissa

established at Rajgangpur and Baragarh, further cement plants can be planned in the district of Koraput. The high grade limestone available in the district of Koraput can be utilised for the calcium carbide industry. In the Dandakaranya Project area different forest-based industries can be started. There is appreciable reserve of quartzite and manganese minerals near Rayagarha and iron-ore near Hirapur. These can be properly exploited and utilised.

Quartzite vanadiferrous ores, fireclay and china-clay are available in the Mayurbhanj industrial zone. A ferro-vanadium plant based on the vanadiferrous magnetites of various dimensions can be started. Good quality quartzite, fireclay and china-clay can support an industrial structure based on glass and ceramic industries.

With its coastal industrial salt units, the industrial zone of the Ganjam district offers a good base for setting up soda ash and ammonium chloride units. Chlorin produced in the caustic soda plant commissioned near Chhatrapur can be used as base material for establishment of pesticide and chemical industries.

In the state, there is great scope for developing agro, live-stock and demand-based industries also. These apart, some industries may be set up to supply ancillary products to large and medium sector establishments. The district-wise growth poles/centres/points of the state are as follows :

Name of the district	Growth poles/centres/points
Cuttack	Cuttack, Jajpur Road, Banki, Athagarh, Kendraparha, and Paradeep
Puri	Bhubaneshwar, Puri, Khorda, Sakshigopal, Pipili, Balugan, Nayagarh, Jatni, Dashapalla, Khandaparha, Tangi, Nimaparha, Baghamari, Begunia and Konarka
Balেশwar	Balেশwar, Bhadrak, Soro, Chandbali and Jaleshwar
Ganjam	Brahmapur, Bhanjanagar, Asika, Ganjam, Paralakhemundi, Chhatrapur, Hinjilikatu and Rambha

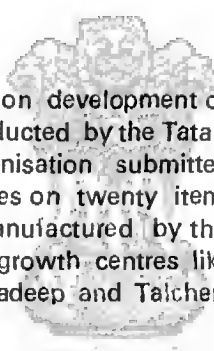
Name of the district	Growth poles/centres/points
Dhenkanal	Dhenkanal, Anugul, Talcher, Bhuben, Hindol, Pal Lahara, Athamallik, Chhendipada, Bagudia, Kamakhyanager and Meramandali
Kendujhar	Barbil, Joda, Kendujhar, Anandapur, Champua, Jhumpura and Dhenkikote
Sundargarh	Sundargarh, Rajgangpur, Lahuniparha, Hemagiri, Banei, Tensa, Kalunga and Biramitrapur
Sambalpur	Sambalpur, Jharsuguda, Hirakud, Baragarh, Brajarajnagar, Attabira, Bamanda, Padmapur, Kuchinda, Barpali, Deogarh, Sohela and Redhakhol
Balangir	Balangir, Titilagarh, Kantabanji, Patnagarh and Sonapur
Kalahandi	Kharial Road, Kesinga, Kharial, Narla Road, Bhawanipatna, Junagarh and Jayapatna
Mayurbhanj	Baripada, Rairangpur, Karanjia, Udala, Betanati, Joshipur, Baisinga and Badampaharh
Phulabani	Phulabani, Boudh, Ghumusur Udayagiri, Bali-gurha and Tikabali
Koraput	Jaypur, Rayagarha, Sunabeda and Damanjodi

Post Independence Survey of Industrial potentialities of the State by different study teams and consultancy organisations

The report on Economic Survey of Orissa by Dr. Sadasiv Mishra published in 1961 showed that there were only 422 agro and forest-based industries in Orissa. The techno-economic survey conducted by the National Council of Applied Economics Research identified eleven items under forest-based industry, six items under agro and live-stock-based industry, seven items under mineral-based industry,

five items under chemical-based industry, sixteen items under metal-based industry, two items under miscellaneous industry and six items under demand-based industry.

The Indian Institute of Foreign Trade conducted an export potential survey of Orissa and submitted a report in 1970 in which eighteen engineering products were suggested along with a number of items for industries at Rourkela, Talcher-Jajpur and Paradeep complex. The Industrial Development Bank of India, ICICI, IFCI and ARC jointly conducted the industrial potential survey of Orissa in 1973 in which suggestions were made for the projects like an additional plant for manufacture of ferro-silicon, aluminium metal manufacturing unit, expansion of the two cement factories of the state, expansion of the capacity of the refractory units, a large integrated pulp-cum-paper unit to provide basic raw material to a number of baby plants, modernisation of rice-mills, alloy steel castings and forgings, and plant for frozen and canned fish.



Next came the survey on development of selected growth centres of the state which was conducted by the Tata Economic Consultancy Service. The above organisation submitted its reports in 1976, incorporating project profiles on twenty items and recommending a set of products to be manufactured by the ancillary and auxiliary industries in some selected growth centres like Rourkela, Kansbahal, Rajgangpur complex, Paradeep and Talcher.

The Small Industries Extension and Training Institute conducted a district-wise techno-economic survey for the state in 1975-76. The Institute suggested sixty products under the mechanical industry, 151 products under chemical and food industries, 21 products under glass and ceramic industries, 19 products under electrical and electronics industries, 13 products under metallurgical industry, 13 products under hosiery industry and 6 products under leather industry. Subsequently when the District Industries Centres were formed District Action Plans for all the districts of the state were prepared which incorporated most of the recommendations made by the Small Industries Extension and Training Institute.

The Administrative Staff College of Hyderabad was asked in 1979 to short-list 100 product groups out of the 807 reserved industries and 22 cottage industries which were suitable for the state. In addition to this, the organisation also conducted a survey on the potential for ancillary industries at Paradeep growth complex.

On the request of the Small Industries Service Institute of the state, the Orissa Technical Consultancy organisation in 1980 suggested 300 projects for development. These apart, occasional efforts were also made to conduct area survey for some important growth centres of the state.

Labour and Employees organisations

By the end of 1981 there were 729 registered labour and employees organisations in the state connected with industries, electricity, mining and construction. The district of Cuttack topped the list with 206 such organisations followed by Puri with 143 organisations, Sundargarh with 69 organisations, Ganjam with 61 organisations, Sambalpur with 58 organisations, Dhenkanal with 55 organisations, Baleshwar with 50 organisations, Kendujhar with 32 organisations, Koraput with 31 organisations, Mayurbhanj with 12 organisations, Balangir with 6 organisations, and Kalahandi and Phulabani with 3 organisations each. Some of the labour and employees organisations are affiliated to their central counterpart like AIBEA, HMS, BMS, AITUC, OSEBEF, CITU, AIFDE, INBEC, AINLIEF and PSC.

The Labour Department of the State Government look to the enforcement of different labour acts and rules so as to promote harmonious industrial relations on the one hand and safeguard the interest of the workers on the other with the ultimate object of raising production and productivity in the industrial front. There are a number of different labour Acts and Rules in force in the state details of which find place in the Chapter VI "Social Services".

Till the end of 1981, 1,270 houses in the public sector and 1,744 houses in the private sector were let out to the industrial workers of the state. This apart, multipurpose labour welfare centres are functioning at Rajabagicha, Khapuria (Cuttack city), Chaudwar, Jajpur Road (Cuttack district), Jaypur, Rayagarha, Theruveli, Machhakund, Nabarangapur (Koraput district), Brahmapur, Asika, Ganjam (Ganjam district), Bhubaneswar (Puri district), Rairangpur, Baripada (Mayurbhanj district), Talcher (Dhenkanal district), Mathkambada (Kendujhar district), Chandbali (Baleshwar district), Rajgangpur, Rourkela (Sundargarh district), Khariel Road (Kalahandi district) and Hirakud, Jharsuguda, Baragarh and Sambalpur (Sambalpur district).

Besides, reading room-cum-recreation centres have been provided at Barang, Jatni, Kesinga, Bhadrak, Paralakhemundi, Balangir, Puri, Anugul, Lathikata and Baleshwar.

APPENDIX I

Industrial progress indicators for different districts in the
state during the year 1977-78

Sl. No.	Name of the District	Fixed capital per factory (Rs. in '000)	Fixed capital (Rs. in '000) per employee	Productive capital per employee	No. of employees per factory	Value of output per rupee of fixed capital (Rs.)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	Baleshwar	197	7	14	20	4.60
2	Balangir	196	5	9	40	3.39
3	Cuttack	948	10	16	98	4.53
4	Dhenkanal	375	19	22	20	0.91
5	Ganjam	385	10	18	37	2.61
6	Kalahandi	83	4	6	22	3.58
7	Kendujhar	457	67	124	69	1.61
8	Koraput	2,462	26	36	97	1.67
9	Mayurbhanj	209	7	14	29	8.22
10	Phulabani	130	4	9	30	2.38
11	Puri	17,405	79	89	219	0.11
12	Sambalpur	1,737	16	32	107	3.94
13	Sundargarh	24,866	61	119	407	1.72
ORISSA		5,558	45	69	123	1.25

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APPENDIX I (Contd.)

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Sl. No.	Name of the district	Value of output per rupee of input (Rs.)	Value of output per worker (Rs. in '000)	Value added per rupee of fixed capital (Rs.)
(1)	(2)	(8)	(9)	(10)
1	Baleshwar ..	1.19	43	0.63
2	Balangir ..	1.36	20	0.79
3	Cuttack ..	1.24	54	0.76
4	Dhenkanal ..	1.43	21	0.16
5	Ganjam ..	1.50	38	0.78
6	Kalahandi ..	1.53	16	0.84
7	Kendujhar ..	1.22	1.47	0.23
8	Koraput ..	1.74	52	0.62
9	Mayurbhanj ..	1.09	59	0.64
10	Phulabani ..	1.68	16	0.93
11	Puri ..	1.75	20	0.06
12	Sambalpur ..	1.35	76	0.92
13	Sundargarh ..	1.49	1.40	0.48
ORISSA —		1.44	76	0.32

APPENDIX I (Concl'd.)

Sl. No.	Name of the district		Value added per employee (Rs. '000)	Value added per rupee of input (Rs.)	Value added per rupee of output (Rs.)	Annual emoluments per employee (Rs. in '000)
(1)	(2)		(11)	(12)	(13)	(14)
1	Baleshwar ..		4	0.16	0.14	17
2	Balangir ..		4	0.32	0.23	21
3	Cuttack ..		7	0.21	0.17	46
4	Dhenkanal ..		3	0.26	0.18	22
5	Ganjam ..		8	0.45	0.30	28
6	Kalahandi ..		3	0.32	0.23	12
7	Kendujhar ..		15	0.17	0.14	78
8	Koraput ..		16	0.65	0.37	40
9	Mayurbhanj ..		4	0.08	0.08	16
10	Phulabani ..		4	0.66	0.39	26
11	Puri ..		5	0.53	0.30	25
12	Sambalpur ..		15	0.32	0.23	60
13	Sundargarh ..		29	0.41	0.27	1.24
ORISSA ..			15	0.37	0.26	63

Source: A Report on Annual Survey of Industries in Orissa (Organised Factory Sector), 1977-78

APPENDIX II

(A) District-wise Large Industries of the state up to 1980-81

Sl. No.	Name of the industries and location	Management	Products	Investments	Employment	Year of production
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Cuttack						
1	Shri Durga Glass, Barang	Private Sector	Glass	733	597	1937
2	Orissa Textile Mills, Chaudwar	Private Sector	Cotton Textile	362	5,000	1949
3	Ferro-chrome Plant, Jajpur Road	Public Sector	Ferro-Chrome	766	566	1969
4	Orissa Cotton Mills, Bhagatpur	Co-operative Sector	Cotton Yarn	..	715	1953
5	Kalinga Tubes, Chaudwar	Private Sector	Steel Tubes and billets, etc.	..	757	1955
6	Titagurh Paper Mills, Chaudwar	Private Sector	Paper, pulp and Alum	..	..	1960
7	Konark Jute Ltd., Dhanmandal	Joint Sector	Sack, Tarpaulin	774	1,700	1979
8	East Coast Breweries and Distilleries, Paradeep	Public Sector	Distilleries	308	..	1979

APPENDIX II (Contd.)

(1)	(2)	(3)	(4)	(5)	(6)	(7)
			Under Implementation			
1	Shree Jagannath Weavers' Co-operative Spinning Mills, Nuapatna	Co-operative Sector	Cotton Yarn	740	850	..
2	Fertiliser Plant, Paradaep	Public Sector (Central)	Phosphatic Fertiliser	24,141	2,000	Underconstruction
3	Shree Sarala Weavers' Co-operative Spinning Mills, Rahama	Co-operative Sector	Cotton Yarn	830	1,200	..
	Sundargarh					
1	Orissa Cement, Rajgangpur	Private Sector	Cement and refractories	16647.29	2,893	1951
2	Hindustan Steel Limited, Rourkela	Public Sector (Central)	Steel ingots, plates, etc.	76,400	39,676	1958
3	Fertiliser Plant, Hindustan Steel Limited, Rourkela	Public Sector (Central)	Phosphatic Fertiliser	2,729	(Employment figures included in the Hindustan Steel Limited, Rourkela)	1958
4	Utkal Kansbahal Machinery,	Private Sector	Industrial machinery	335	985	1960
5	IDL Chemicals, Rourkela	Private Sector	Explosives	..	412	1969
			Under Implementation			
1	Gangpur Weavers' Co-operative Spinning Mills, Sundargarh	Co-operative Sector	Cotton Yarn	740	1,200	..
2	Mini Cement Plant, Sundargarh	Joint Sector	Portland cement	730	387	..

Sambalpur		Under Production			
1	Orient Paper Mills, Brajaraj-nagar	Private Sector	Paper and Paper Board	1,619.63	4,980 1939
2	Indian Aluminium Company, Hirakud	Ditto	Aluminium ingots	760	820 1958
3	Belpahar Refractories, Belpahar	Ditto	Refractories	350	2,179 1959
4	Bhaskar Textiles Ltd., Jharsuguda	Ditto	Cotton textiles and yarn	320	3,528 1964
5	Hira Cement Works, Baragarh	Public Sector (State)	Cement	933	987 1967
		Under Implementation			
1	Slag Cement (Expansion of Hira Cement Works)	Public Sector	Slag cement	930	116 ..
Ganjam		Under production			
1	Jayashree Chemicals Ltd., Chhatrapur	Private Sector	Caustic Soda	624	541 1967
		Under Implementation			
1	Indian Rare Earth Ltd., Chhatrapur	Public Sector (Central)	Sand Separation	850	1,100 ..
2	Hydro-Sulphite Project of Jayshree Chemicals Chhatrapur	Private Sector	..	..	.. ..
3	Asika Spinning Mills, Asika	Public Sector (State)	Cotton Yarn	755	1,000 ..
Puri		Under Production			
1	Coach Repairing Work-shop, Bhubaneshwar	Public Sector (Central)	Railway Coach repair	800	3,000 1981

APPENDIX II (Contd.)

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Under Implementation						
1	Boiler Piping and Accessories Plant, Bhubaneswar	Public Sector	Fabrication and bending of Carbon and alloy steel	321	222	..
2	Utkal Weavers' Co-operative Spinning Mills, Khorda	Co-operative Sector	Cotton Yarn	700	1,200	..
3	Textile Machinery Manufacturing Unit, Bhubaneswar	Public Sector	Ring Spinning frames, drawn frames and speed frames	540	..	..
4	Electronic Connector, Bhubaneswar	Ditto	Electronic Connectors	360	367	..
5	Professional Grade Magnetic Type, Bhubaneswar	Ditto	Magnetic and Radio Tapes	387	106	..
Koraput						
1	Jeyapore Sugar Co. Ltd., Rayagarha	Private Sector	Sugar and Molasses	87	180	1937
2	Straw Products Ltd., Jaykaypur	Private Sector	Paper	3,600	2,298	1962
3	Indian Metals and Ferro Alloys Ltd., Theruvelli	Ditto	Ferro-silicon and Silicon metal	557	436	1967
4	Hindustan Aeronautics, Sunabeda	Public Sector (Central)	Air Craft	..	3,517	..
5	Indian Metal and Carbide, Theruvelli	Private Sector	Silicon Carbide	519	429	..

INDUSTRIES				
No.	Unit	Sector	Investment (Rs. lakhs)	Year of completion
1	Sewa Paper Ltd., Jaypur	Private Sector	750	..
2	Alumina /Aluminium Plant, Damanjodi	Public Sector (Central)	1,62,000	Construction work continuing
Kendujhar				
1	Kalinga Iron Works, Barbil	Public Sector	855	1963
Under Production				
			861	Pig iron, C. I. casting and spun pipe
Under Implementation				
1	Orissa Sponge Iron Ltd., Kendujhar	Joint Sector	2,415	Sponge Iron
2	Electro Chem Orissa Ltd., Bileipada	Ditto	618	Electrolytic
3	Spun Pipe, Barbil	Public Sector	523	Ductile Iron Spun Pipe
4	Charge Chrome Plant, Bamanipal	Ditto	4,455	Charge Chrome
Mayurbhanj				
1	Calcium Carbide, Rairangpur	Joint Sector	700	Calcium carbide
2	Cross-linked Polythene Cable, Baripada	Ditto	1,600	XLPE and IVC cables
3	Baripada Spinning Mills, Baripada	Co-operative Sector	745	Cotton Yarn
			1,000	

APPENDIX II (Contd.)

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dhenkanal						
1	Talcher Fertiliser, Talcher (Fertiliser Corporation of India)	Public Sector	Under Production Fertiliser	20,824	1,722	1980
2	IPIBEL Refractories, Dhenkanal	Joint Sector	Refractories	700	750	1982
3	ORICHEM, Talcher	Ditto	Sodium dichromate and Sodium sulphate	350	316	..
4	Kalinga Weavers' Co-operative Spinning Mills, Govindpur	Co-operative Sector	Yarn	456	1,200	..
1	S. N. Corporation, Dhenkanal	Joint Sector	Under Implementation H. T. Faster	570	350	..
2	Aluminium Smelter Plant, Anugul		Aluminium	Figures included in Aluminium Plant, Damanjodi, Koraput Public Sector		
Balashwar						
1	Facor, Randhia (Bhadrak)	Private Sector	Under Implementation Charge Chrome	3,000	3,000	..
Balangir						
1	Sonapur Spinning Mills, Sonapur	Public Sector	Under Implementation Textile Yarn	640	1,000	..
Kalahandi and Phulabani						
Nil						
(B) District-wise Medium Industries of the state						
Cuttack						
1	Orissa Industries, Barang	Private Sector	Under Production Refractory and Sanitary	16.91	597	1952
2	Lalbaba Roller Flour Mills, Nuabazar, Cuttack	Ditto	Flour	..	39	1964

3	Tile Factory, Chaudwar	Public Sector	Tile	27	116	1966
4	Orissa Textiles and Steels, Nuabazar, Cuttack	Private Sector	Cloth and Re-rolling	..	..	1975
5	Golden Dragon Sea Food Paradeep	Ditto	Fish processing and freezing plant	40-50	134	..
6	Jwala Roller Flour Mills, Cuttack	Ditto	Wheat Products	62	50	..
7	Utkal Rubber, Jaipur	Ditto	Cycle Tyres and Tubes	23	50	1980
8	Kalinga Engineers, Paradeep	Ditto	Workshop	35	35	..
9	Tripty Drinks, Jagatpur	Ditto	Soft drinks	2,096	40	..
10	Cholamandal Nots Ltd., Jagatpur	Ditto	Fishing Nets	27	30	..
11	Sea Victor (P) Ltd., Paradeep	Ditto	Sea Food	17-40	85	..
Under Implementation						
1	Electroluxe India (P) Ltd., Chaudwar	Private Sector	Refrigerator	..	..	..
2	Konark Ceramics, Khuntuni	Ditto	Ceramics and Refractories	20-15	48	..
3	Mamata Paper, Jagatpur	Ditto	Craft Paper	70	85	..
4	Trimurty Hotel, Cuttack	Private Sector	Hotel	41	53	..

APPENDIX II (Contd.)

(1)	(2)	(3)	(4)	(5)	(6)	(7)
5	K. K. Roller Flour Mill, Cuttack	Ditto	Wheat Products	49	40	..
6	D. N. Hotel (P) Ltd., Paradeep	Ditto	Hotel	64.92	100	..
7	Jagannath Paper Mills (P) Ltd., Bidhyadharpur	Ditto	Paper	49	76	..
8	Golden Jute (P) Ltd., Jagatpur	Private Sector	Jute Twine	100	180	..
9	Sakhigopal Paper (P) Ltd., Jagatpur	Ditto	Craft Paper	92	100	..
10	Konark Malbeables (P) Ltd., Jagatpur	Ditto	M.I. and S.G. casting	98.35	198	..
11	Ashok Hotel, Cuttack	Ditto	Hotel	29.84	35	..
12	Paradeep Oxygen (P) Ltd., Jagatpur	Ditto	Oxygen and Acetylene	115.60	70	..
13	Ambe Paper and Board Mills (P) Ltd., Jagatpur	Ditto	Straw Board and Duplex Board	55.90	60	..
14	Unique Builders Ltd. (Re-rolling Mill), Jagatpur	Ditto	M. S. Re-rolled products	31.50	35	..
15	Dumoria Enterprises (P) Ltd., Paradeep	Ditto	Hotel	64.30	62	..
16	Central Orissa Straw Board Ltd., Jagatpur	Ditto	Straw Board	60	40	..
17	Eastern Metal and Ferro Alloys, Haridaspur	Ditto	Low carbon Ferro Alloys	88	64	..

18	Refractory Unit (IDC), Chaudwar	Public Sector	Refractory	40	100	..
19	Orissa Textile Processing Co-operative Societies Ltd., Jagatpur	Co-operative Sector	Cloth Processing	102	200	..
Sundargarh						
Under Production						
1	Kalinga Textiles, Rajgangpur (Orissa Spinning Mills)	Private Sector	Cotton yarn	93.50	540	..
2	Kaling Mills (P) Ltd., Rajgangpur	Ditto	Flour	..	..	1960
3	Kalinga Auto Ltd., Kalunga	Ditto	Machinery structural	23.72	75	1964
4	Orissa Fertiliser and Chemicals, Kalunga	Public Sector	Fertiliser	75	500	1973
5	Asiatic Oxygen, Rourkela	Private Sector	Oxygen	23.03	79	1976
6	Mamata Drinks and Industries, Rourkela	Private Sector	Soft Drinks	32.60	50	1973
7	Steeloflex, Rourkela	Ditto	Fabrication unit	19	68	1963
8	Rourkela Construction, Rourkela	Ditto	Structural Fabrication	28.18	35	..
9	Otto India (P) Ltd., Kalunga	Ditto	Coke oven Plant machine and equipment	23.72	75	..
10	Hariyantra Udyog, Rajgangpur	Ditto	Hydraulic toggle press	60.92	79	1976
11	Orissa Industries, Lathikata	Ditto	Refractories	154	750	1962

APPENDIX II (Contd.)

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Under Implementation						
1	Coke Oven Plant, Rourkela	Public Sector	..	..	..	..
2	Super Weld Ltd., Rourkela	Private Sector	Welding Electrode	45	46	..
3	Parijat Tubes Ltd., Rourkela	Ditto	Lancing pipes	19-60	30	..
4	Utkal Electro Casting (P) Ltd., Rourkela	Private Sector	S. G. Iron and Steel casting	97-15	197	..
5	Indo Flogates Ltd., Rourkela	Ditto	Flocon sliding gates and Valves	110	112	..
6	Rourkela Roofing Corporation, Rourkela	Ditto	Laminated Jute Yarn	100-56	18	..
Sambalpur						
1	Aluminium Industries, Hirakud	Private Sector	Under production Aluminium conductor	176	185	1959
2	Re-rolling Mills, Hirakud	Public Sector	Rods and Torsteel	199	260	1965
3	Hira Cable Plant, Hirakud	Ditto	Aluminium conductor and winding wire	236	352	1965
4	Orissa Weaver's Co-operative Spinning Mill, Tora	Co-operative Sector	Yarn	274	913	1959
5	Orissa Oil Industries, Sambalpur	Private Sector	Sal oil	150-55	111	1975
6	Hirakud Industries Works, Hirakud	Ditto	Fabrication	109	500	1962

7	Orissa Concrete Products, Hirakud	Ditto	Hume pipe sleepers	24-50	105	..
8	Co-operative Sugar Mills, Baragarh	Co-operative Sector	Sugar	..	..	..
9	Indian Farmers and Fertilisers Corporation, Baragarh	Private Sector	Mixed Fertiliser	36	110	..
Under Implementation						
1	Properzi Mill, Hirakud	Public Sector	Aluminium Rod	132	66	..
Ganjam						
Under Production						
1	Aska Co-operative Sugar Industries, Asika	Co-operative Sector	Sugar and rectified spirit	75-74	750	1954
2	East Coast Salt and Chemicals, Sumandi	Public Sector	Salt	50	29	1966
3	Aska Central Multipurpose Co-operative Society, Asika	Co-operative Sector	Salt Seed and rice brown oil	..	..	..
Under Implementation						
1	Manorama Chemicals Ltd., Ganjam	Private Sector	Bleaching powder	42	80	..
Puri						
Under Production						
1	Patnaik Industries, Bhubanashwar	Private Sector	Foundry material	..	..	..
2	M. K. Industrial Chemicals, Bhubaneshwar	Private Sector	Saccharine	..	..	1975

APPENDIX II (Contd.)

(1)	(2)	(3)	(4)	(5)	(6)	(7)
3	Konarka Watch, Khorda	Joint Sector	Watch	33-55	100	1980
4	Coastal Automobiles, Bhubaneswar	Private Sector	Motor Cycle assembly	30	35	..
5	Paradeep Marine, Bhubaneswar	Private Sector	Fish Processing	48	127	..
6	Tapang Light Foundry, Narangah	Private Sector	C. I. Pipes and C. I. casting	..	..	..
7	Prachi Restaurant, Bhubaneswar	Private Sector	Hotel	59	74	..
8	Utkal Carbon (P) Ltd., Bhubaneswar	Private Sector	Sick Industries Carbon paste	29-80	40	..
9	Orissa Refractories and Ceramics (P) Ltd., Bhubaneswar	Private Sector	Refractories	69	150	..
1	Orissa Drugs and Chemicals (P) Ltd., Bhubaneswar	Joint Sector	Under Implementation Drug formation	150	200	..
2	Anand Industrial Gases Ltd., Bhubaneswar	Private Sector	Oxygen and Acetylene	28-30	40	..
3	Ravi Fisheries (P) Ltd., Bhubaneswar	Private Sector	Sea food	45-34	120	..

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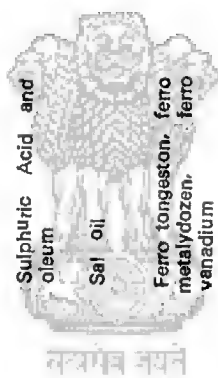
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4	Sun-N-Beach Ltd., Puri	Hotel (P)	Private Sector	Hotel	52	135	..
5	Kalinga Studio, Bhubaneswar		Private Sector	Film Processing	39	40	..
6	Dynamic Recording Studio Ltd., Bhubaneswar		Private Sector	Sound Recording	40	40	..
7	Konarka Cement and Asbestos Ltd., Bhubaneswar		Private Sector	Asbestos and Pres- sure Pipe	79.70	80	..
8	Aluminium Chloride India (P) Ltd., Bhubaneswar		Private Sector	Aluminium Chloride	43.75	29	..
9	Vijay International Ltd., Puri		Private Sector	Hotel	58	56	..
10	Lingaraj Textile (P) Ltd., Chandaka		Private Sector	Cotton yarn	69.35	60	..
11	Precipitated Calcium Carbonate, Bhubaneswar		Private Sector	Calcium Carbonate	96.40	70	..
12	Hotel Swosti, Bhubaneswar		Private Sector	Hotel	68.50	50	..
13	Orissa Ply and Pannels Ltd., Khorda		Private Sector	Block Boards and Ply Boards	98.40	414	..
14	Eskay Machinery (P) Ltd., Bhubaneswar		Private Sector	Steel Aluminium Fabrication	121.30	221	..
15	J. B. S. Capacitors Ltd., Bhubaneswar		Private Sector	Electronic ceramic capacitor	106	120	..
16	IPITRON Times Ltd., Bhubaneswar		Joint Sector	Digital watches	73.30	93	..

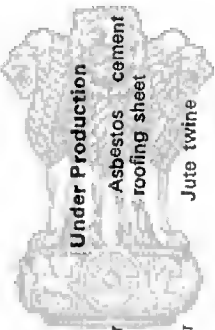
APPENDIX II (Contd.)

(1)	(2)	(3)	(4)	(5)	(6)	(7)
17	NATCOL Electronics, Chandaka	Joint Sector	Prerecorded and blank Cassettes	102'40	121	..
18	Utkal Restaurant Hotel Ltd., Puri	Private Sector	Hotel	82'60	56	..
19	Orissa Steel Corporation Ltd., Chandaka	Private Sector	Sheet Steel processing	49'20	44	..
20	Orissa Marine Industries (P) Ltd., Bhubaneswar	Private Sector	Deep Sea fishing trawler	145'50	22	..
21	Swati Iron and Steel Ltd., Chandaka	Private Sector	Alloy Iron casting	82	193	..
22	Chandaka Alloy Steel Foundry (P) Ltd., Chandaka	Private Sector	Steel casting	122'95	225	..
23	Hotel Safari, Bhubaneswar	Private Sector	Hotel	86'70	64	..
24	Trans Electric (P) Ltd., Bhubaneswar	Private Sector	Power transformer	73'50	90	..
25	Jagannath Chemicals (P) Ltd., Bhubaneswar	Private Sector	Aluminium chloride	45'75	28	..
Koraput						
1	OTECO, Sunabeda	Joint Sector	Under Production Toolings	112	155	1967
2	Jeyapore Sugar, Rayagatha	Private Sector	Distillery	..	..	1948
3	Utkal Oils Ltd., Ambaguda	Private Sector	Ricebrown oil, Sal oil refining	113	80	..
4	Ferro-manganese Plant, Rayagatha (Jeyapore Sugar Company Limited)	Private Sector	Ferro manganese	132'90	279	1958

			Under Implementation			
1	Sahu Gases, Rayagarha	Private Sector	Industrial gases	122'85	80	..
2	Konarka Tanin (P) Ltd., Jaypur	Private Sector	Vegetable tanin extract	159'60	120	..
Kendujhar			Under Production			
1	TISCO., Joda	Private Sector	Ferro manganese	260	463	1957
Durbay Industrial Project (P) Ltd., Matkambada			Under Implementation			
1		Private Sector	Explosive	190	100	..
Mayurbhanj			Under Production			
1	East Coast Fertiliser and Chemicals (P) Ltd., Kalma	Joint Sector	Sulphuric Acid and oleum	132'60	70	1981
2	Orissa Oil Industries, Rairangpur	Private Sector	Sal oil	57	91	1972
3	Utkal Ferro Alloys Ltd., Rairangpur	Private Sector	Ferro tungston, ferro metalydozen, ferro vanadium	26	45	1977
4	Auro Flour Mill, Baripada	Private Sector	Wheat products	..	..	1979
5	Chemical and Dyes Ltd., Baripada	Private Sector	Acid	70	50	..
Krab and Cie (India) Pvt. Ltd., Kalma			Under Implementation			
1		Private Sector	Basic chromium sulphate	134	200	..
2	Utkal Wood Products, Jashipur	Private Sector	Veneers	81	100	..



APPENDIX II (Contd.)

(1)	(2)	(3)	(4)	(5)	(6)	(7)
3	Konark Paper and Industries Ltd., Jharia	Private Sector	Writing and Printing paper	197	175	..
4	Ashirvad Paper Udyog (P) Ltd., Rairangpur	Private Sector	Ditto	179	188	..
5	Mayurbhanj Metal (P) Ltd., Rairangpur	Private Sector	Malleable casting	95.70	150	..
6	Tecferv Metal and Moulding Company (P) Ltd., Rairangpur	Private Sector	G. I. and M. I. Casting	133.70	70	..
						
1	Utkal Asbestos Ltd., Dhenkanal	Private Sector		200	154	1980
2	Kalinga Jute Products, Dhenkanal	Private Sector		69.77	211	1974
3	Unique Builder, Talcher	Private Sector	Alloy casting	390	86	1975
4	Prasant Paper Mills Ltd., Dhenkanal	Private Sector	Kraft paper	15.30	38	..
Under Implementation						
1	Aurobinda Paper Mills Ltd., Talcher	Private Sector	Paper	68.90	110	..
2	Coco Fats and Proteins Ltd., Dhenkanal	Private Sector	Hydrogenated non-edible and refined oil	130	66	..

1	Jaikan Dasmal, Rupsa	Private Sector	Jute twine	44	247	1975
2	Bhatnagar Solvent Extn., Balleshwar	Private Sector	Solvent Extn.	28'55	60	1975
Under Implementation						
1	Cholamandal Sea Crafts Ltd., Chandbali	Private Sector	Fibre Glass Trawler	24'30	45	..
2	Enami Paper Mills, Balgopalpur	Private Sector	Writing and Printing paper	184	195	..
Kalahandi						
1	Orissa Vegetable Oil Complex, Kesinga	Private Sector	Rice brown oil mahua oil	70	184	..
Balangir						
1	Ambica Vegetables and Chemicals (P) Ltd., Dunguripali	Private Sector	Refined oil	130	150	1981
Phulabani						
1	G. K. Straw Board Ltd., Manamunda	Private Sector	Straw Board	24	80	..

Source—Industries Department, Government of Orissa

APPENDIX III
Statement showing the progressive achievement in Small-Scale Industries Sector since 1978-79 to 1985-86

Agro and Marine-based		Capital in Lakhs of Rs.										
		No. of Units under production										
		By the end of 1978-79			During 1979-80			During 1980-81				
Sl. No.	District	No.	Capital	Employment	No.	Capital	Employment	No.	Capital	Employment		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)		
1	Baleshwar	..	379	350.79	3,345	73	43.65	52	13.05	146		
2	Balangir	..	90	108.01	983	33	14.60	22	8.49	82		
3	Phulabani	..	60	16.30	303	18	4.37	22	6.93	87		
4	Cuttack	..	289	249.36	1,898	109	78.14	84	64.25	635		
5	Dhenkanal	..	124	1110.35	605	32	21.10	30	22.36	120		
6	Ganjam	..	297	122.16	1,623	102	35.64	89	58.98	420		
7	Kalahandi	..	87	211.57	1,053	22	9.30	24	15.58	91		
8	Kendujhar	..	119	34.53	410	50	27.55	35	8.74	110		
9	Koraput	..	225	140.26	1,247	43	17.04	47	25.78	141		
10	Mayurbhanj	..	165	92.66	696	66	26.54	25	34.63	70		
11	Puri	..	147	263.15	1,196	49	77.13	52	46.08	279		
12	Sambalpur	..	247	411.22	2,466	83	34.53	31	20.95	143		
13	Sundargarh	..	144	177.93	1,279	28	7.42	40	11.58	98		
..	Total	2,373	2,288.49	17,104	708	397.01	2,894	553	337.40	2,422		

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Sl. No.	District	(2)	By the end of 1980-81			By the end of 1982-83			By the end of 1985-86		
			No.	Capital	Employment	No.	Capital	Employment	No.	Capital	Employment
(1)			(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1	Balashwar	..	504	407.49	3,893	600	476.78	3,997	762	620.02	4,778
2	Balangir	..	145	131.10	1,165	226	195.46	1,512	373	391.16	2,080
3	Phulabani	..	100	27.60	445	125	38.28	517	156	67.14	657
4	Cuttack	..	482	391.75	3,005	670	602.23	4,082	881	882.67	5,667
5	Dhenkanal	..	186	154.01	865	268	192.15	1,146	349	252.40	1,492
6	Ganjam	..	488	216.78	2,469	661	360.30	3,128	913	634.52	4,251
7	Kalahandi	..	133	236.45	1,207	189	272.34	1,503	324	380.70	2,037
8	Kendujhar	..	204	70.82	780	231	84.69	857	298	133.82	1,080
9	Koraput	..	315	183.08	1,626	416	233.29	2,498	532	361.74	2,928
10	Mayurbhanj	..	256	153.83	936	326	188.51	1,134	431	228.57	1,427
11	Puri	..	248	386.36	1,748	378	493.50	2,246	516	1,077.04	3,477
12	Sambalpur	..	361	466.70	2,845	424	518.89	3,073	544	633.73	3,582
13	Sundargarh	..	212	196.93	1,436	271	224.54	1,645	3,683	320.41	2,097
	Total	..	3,634	3,022.90	22,420	4,785	3,880.96	27,338	6,447	5,982.92	35,553

APPENDIX III (Contd.)

Chemicals and Allied

Sl. No.	District	By the end of 1978-79			During 1979-80			During 1980-81		
		No.	Capital	Employment	No.	Capital	Employment	No.	Capital	Employment
(1)	(2)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)
1	Baleshwar	77	88.69	486	6	0.42	24	15	15.09	111
2	Balangir	48	30.88	338	6	4.46	36	3	2.14	37
3	Phulabani	10	1.53	47	5	1.10	31	5	2.71	25
4	Cuttack	176	198.69	1,441	39	27.07	249	43	52.97	255
5	Dhenkanal	33	29.70	253	7	3.60	37	6	15.51	31
6	Ganjam	118	67.25	854	31	13.68	176	23	3.59	46
7	Kalahandi	26	10.94	251	1	0.10	2	6	1.33	15
8	Kendujhar	25	12.70	124	8	6.58	59	6	1.18	19
9	Koraput	48	26.32	287	12	3.54	76	20	2.37	73
10	Mayurbhanj	28	26.37	254	4	2.47	20	4	20.13	72
11	Puri	101	100.48	745	16	4.59	58	15	6.68	47
12	Sambalpur	114	119.29	1,045	20	13.95	136	8	2.61	42
13	Sundargarh	67	133.34	792	20	16.67	191	8	6.14	70
Total		871	846.18	6,917	175	98.23	1,095	161	132.45	843

APPENDIX III (Contd.)

Sl. No.	District	By the end of 1980-81			By the end of 1982-83			By the end of 1985-86			
		No.	Capital	Employment	No.	Capital	Employment	No.	Capital	Employment	
(1)	(2)	(30)	(31)	(32)	(33)	(34)	(35)	(36)	(37)	(38)	
1	Baleshwar	..	98	104.20	621	121	128.56	674	108	126.06	646
2	Balangir	..	57	37.48	411	64	42.84	465	65	50.64	429
3	Phulabani	..	20	5.34	103	26	11.12	137	22	6.09	111
4	Cuttack	..	258	278.73	1,945	329	467.66	2,370	307	463.08	2,337
5	Dhenkanal	..	46	48.81	321	49	43.54	334	47	51.35	326
6	Ganjam	..	172	84.52	1,076	210	134.76	1,372	223	155.46	1,469
7	Kalahandi	..	33	12.37	268	41	13.74	298	36	16.45	302
8	Kendujhar	..	39	20.51	202	48	25.75	259	33	21.84	212
9	Koraput	..	80	32.23	436	97	40.61	486	74	43.47	405
10	Mayurbhanj	..	36	48.97	346	53	55.19	372	46	55.90	352
11	Puri	..	131	111.75	850	186	275.78	1,298	170	317.51	1,020
12	Sambalpur	..	142	135.85	1,223	155	148.95	1,283	129	172.36	1,175
13	Sundargarh	..	95	156.15	1,053	134	250.82	1,368	117	295.43	1,338
Total		..	1,207	1,076.91	8,855	1,513	1,639.72	10,716	1,377	1,775.64	10,122

APPENDIX III (Contd.)

Electrical and Electronics

Sl. No.	District	(1)	(2)	By the end of 1978-79			During 1979-80			During 1980-81		
				Number	Capital	Employment	Number	Capital	Employment	Number	Capital	Employment
(1)	(2)	(39)	(40)	(41)	(42)	(43)	(44)	(45)	(46)	(47)	(48)	(49)
1	Balashwar	..	6	11.55	182	..	1	0.12	15	..	..	..
2	Balangir	..	4	4.62	27	..	1	0.21	2	1	3.36	8
3	Phulabani	..	..	..	..	..	..	..	..	..	..	..
4	Cuttack	..	25	42.44	240	..	2	10.92	20	8	13.13	77
5	Dhenkanal	..	8	5.26	37	..	1	0.36	4	1	15.62	12
6	Ganjam	..	7	2.15	35	..	..	..	..	1	0.99	10
7	Kalahandi	..	1	0.50	6	..	..	..	..	..	..	..
8	Kendujhar	..	1	1.37	6	..	..	..	..	..	..	..
9	Koraput	..	5	1.91	21	..	2	0.36	9	1	0.07	4
10	Mayurbhanj	..	..	..	..	..	1	0.09	2	4	1.73	16
11	Puri	..	10	24.63	125	..	1	0.50	5	2	4.12	11
12	Sambalpur	..	10	9.99	86	..	2	0.28	8	2	0.56	21
13	Sundargarh	..	27	35.74	211	..	1	0.10	3	6	7.66	32
..	Total	..	104	139.56	976	..	12	12.94	68	26	47.24	191

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APPENDIX III (Contd.)

Sl. No.	District	By the end of 1980-81			By the end of 1982-83			By the end of 1985-86		
		Number	Capital	Employment	Number	Capital	Employment	Number	Capital	Employment
(1)	(2)	(48)	(49)	(50)	(51)	(52)	(53)	(54)	(55)	(56)
1	Baleshwar	..	7	11.67	197	15.12	193	10	18.34	218
2	Balangir	..	6	7.59	37	7.48	38	9	9.39	48
3	Phulabani	..	..	..	1	0.09	3	1	0.09	3
4	Cuttack	..	35	66.49	337	96.55	441	74	186.29	674
5	Dhenkanal	..	10	21.24	53	62.56	137	17	65.91	125
6	Ganjam	..	9	3.14	45	4.10	57	18	10.26	80
7	Kalahandi	..	1	0.50	6	2.46	12	4	3.67	21
8	Kendujhar	..	2	1.42	9	1.38	6	2	1.42	9
9	Koraput	..	8	2.34	34	7.00	58	29	13.11	92
10	Mayurbhanj	..	5	1.82	18	4.37	20	8	4.37	30
11	Puri	..	13	29.25	141	55.00	213	47	370.16	502
12	Sambalpur	..	14	10.83	115	12.61	129	26	19.96	150
13	Sundargarh	..	34	43.60	246	47.54	266	54	91.14	356
	Total	..	144	199.89	1,238	316.33	1,583	299	794.11	2,308

APPENDIX III (Contd.)

Engineering and Metal Based

Sl. No.	District	By the end of 1978-79			During 1979-80			During 1980-81		
		Number	Capital	Employment	Number	Capital	Employment	Number	Capital	Employment
(1)	(2)	(57)	(58)	(59)	(60)	(61)	(62)	(63)	(64)	(65)
1	Baleswar	34	35.41	286	6	3.71	36	7	1.97	30
2	Balangir	41	33.01	361	7	22.84	46	17	21.29	130
3	Phulabani	10	2.06	64	2	0.21	8	3	0.90	19
4	Cuttack	319	418.78	3,537	52	45.54	375	74	113.42	466
5	Dhenkanal	36	27.88	322	8	3.42	47	14	5.39	66
6	Ganjam	150	80.40	985	14	5.92	74	21	13.80	100
7	Kalahandi	21	17.55	236	5	1.90	26	17	7.61	40
8	Kendujhar	36	16.82	200	4	2.66	30	..	..	..
9	Koraput	73	48.79	644	6	3.34	56	15	12.03	61
10	Mayurbhanj	30	15.80	256	5	1.64	53	4	10.16	35
11	Puri	101	157.93	1,440	20	4.84	78	17	13.33	85
12	Sambalpur	115	133.55	1,132	11	7.90	78	9	6.79	51
13	Sundargarh	228	493.21	3,844	24	50.42	214	61	130.81	1,270
	Total	1194	1,487.19	13,307	164	153.34	1,121	259	337.50	2,353

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APPENDIX III (Contd.)

Sl. No.	District	By the end of 1980-81			By the end of 1982-83			By the end of 1985-86		
		(66)	(67)	(68)	(69)	(70)	(71)	(72)	(73)	(74)
		Number	Capital	Employment	Number	Capital	Employment	Number	Capital	Employment
1	Baleshwar	..	47	41.09	352	66	67.49	106	144.37	671
2	Balangir	..	65	77.14	537	85	94.82	113	243.74	945
3	Phulabani	..	15	3.17	91	21	11.99	23	13.05	146
4	Cuttack	..	445	577.74	4,378	619	873.56	965	1,406.20	8,124
5	Dhenkanal	..	58	36.69	435	112	126.36	178	267.53	1,215
6	Ganjam	..	185	100.12	1,159	228	132.36	307	288.46	1,830
7	Kalahandi	..	43	27.06	302	57	51.44	79	64.99	488
8	Kendujhar	..	40	19.46	230	51	22.90	66	33.63	370
9	Koraput	..	94	63.16	761	111	87.66	154	172.25	1,082
10	Mayurbhanj	..	39	27.60	344	57	42.33	89	68.47	679
11	Puri	..	138	176.10	1,603	188	282.96	329	868.13	3,150
12	Sambalpur	..	135	148.24	1,261	168	185.50	213	274.55	1,699
13	Sundargarh	..	313	680.44	5,328	474	1075.14	649	1,799.41	11,459
	Total	..	1,617	1,978.03	16,781	2,237	3,054.41	3,271	5644.78	31,858

APPENDIX III(Contd.)

Forest and Wood Based

Sl. No.	District	By the end of 1978-79			During 1979-80			During 1980-81		
		No.	Capital	Employment	No.	Capital	Employment	No.	Capital	Employment
(1)	(2)	(75)	(76)	(77)	(78)	(79)	(80)	(81)	(82)	(83)
1	Baleshwar	..	..	..	..	..	..	..	..	..
2	Balangir	..	..	..	..	..	..	..	..	..
3	Phulabani	..	..	..	..	..	..	..	..	..
4	Cuttack	..	..	..	..	..	..	..	..	..
5	Dhenkanal	..	..	..	..	..	..	..	..	..
6	Ganjam	..	..	..	..	..	..	..	..	..
7	Kalahandi	..	..	..	..	..	..	..	..	..
8	Kendujhar	..	..	..	..	..	..	..	..	..
9	Koraput	..	..	..	..	..	..	..	..	..
10	Mayurbhanj	..	..	..	..	..	..	..	..	..
11	Puri	..	..	..	..	..	..	..	..	..
12	Sambalpur	..	..	..	..	..	..	..	..	..
13	Sundargarh	..	..	..	..	..	..	..	..	..
Total		695	63.11	5,490	235	97.37	1,505	236	133.00	1,767

APPENDIX III (Contd.)

Sl. District No.	(1)	(2)	By the end of 1980-81			By the end of 1982-83			By the end of 1985-86		
			No.	Capital	Employ- ment	No.	Capital	Employ- ment	No.	Capital	Employ- ment
			(84)	(85)	(86)	(87)	(88)	(89)	(90)	(91)	(92)
1	Baleshwar	..	90	42-20	618	179	61-31	900	231	57-87	1,290
2	Balangir	..	44	26-78	370	102	77-37	777	151	68-39	839
3	Phulabani	..	38	9-64	235	45	13-76	258	66	16-13	422
4	Cuttack	..	273	145-12	1,990	532	320-92	3,347	638	241-31	3,970
5	Dhenkanal	..	67	33-82	423	123	62-10	815	184	57-50	1,662
6	Ganjam	..	80	32-81	562	151	61-32	886	193	58-89	972
7	Kalahandi	..	52	37-17	474	100	66-77	777	155	63-27	1,062
8	Kendujhar	..	67	21-05	345	126	35-53	596	148	35-83	721
9	Koraput	..	98	29-83	810	160	49-03	1,119	209	50-72	1,428
10	Mayurbhanj	..	64	28-56	556	125	83-26	819	179	97-83	1,161
11	Puri	..	62	41-24	496	170	102-33	1,122	234	206-95	1,663
12	Sambalpur	..	149	68-43	1,086	209	85-00	1,424	228	72-13	1,544
13	Sundargarh	..	82	78-35	752	158	128-82	1,217	171	102-44	1,232
Total			1,166	594-73	8,673	2,180	1147-52	14,157	2,787	1128-76	17,966

APPENDIX III (Contd.)

Glass and Ceramics

Sl. No.	District	By the end of 1978-79			During 1979-80			During 1980-81		
		No.	Capital	Employment	No.	Capital	Employment	No.	Capital	Employment
(1)	(2)	(93)	(94)	(95)	(96)	(97)	(98)	(99)	(100)	(101)
1	Baleshwar	..	12.65	493	6	0.74	34	18	6.82	262
2	Balangir	..	42.76	482	19	2.44	440	12	4.45	296
3	Phulabani	..	2.65	100	10	0.45	150	7	1.65	122
4	Cuttack	..	40.66	1,254	49	24.96	559	60	27.18	850
5	Dhenkanal	..	16.84	471	20	3.00	100	33	11.40	442
6	Ganjam	..	17.63	479	24	6.88	212	36	15.03	647
7	Kalahandi	..	7.32	327	2	1.50	118	7	1.90	96
8	Kendujhar	..	8.11	370	8	3.78	104	11	5.20	152
9	Koraput	..	13.51	606	15	2.94	278	14	7.85	260
10	Mayurbhanj	..	30.25	1,621	36	15.52	256	12	15.32	293
11	Puri	..	22.13	478	12	6.74	201	13	15.51	154
12	Sambalpur	..	45.51	2,020	23	9.47	767	19	18.35	691
13	Sundergarh	..	50.24	1,849	32	15.18	922	19	11.11	562
Total		..	310.26	10,550	256	93.60	4,141	261	141.77	4,827

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Sl. No.	District	By the end of 1980-81			By the end of 1982-83			By the end of 1985-86		
		No.	Capital	Employment	No.	Capital	Employment	No.	Capital	Employment
(1)	(2)	(102)	(103)	(104)	(105)	(106)	(107)	(108)	(109)	(110)
1	Balashwar	81	20.21	789	157	27.49	2,493	221	137.15	3,066
2	Balangir	50	49.65	1,218	61	59.21	1,391	82	130.44	1,866
3	Phulabani	33	4.75	372	101	73.91	1,533	214	86.70	2,429
4	Cuttack	174	92.80	2,663	248	186.05	3,716	377	404.70	6,172
5	Dhenkanal	113	31.24	1,013	186	86.22	2,068	308	240.77	5,953
6	Ganjam	100	39.54	1,338	188	84.03	2,868	389	210.30	6,557
7	Kalahandi	22	10.72	541	44	13.15	769	69	40.19	1,302
8	Kendujhar	46	16.89	626	65	21.48	1,015	152	89.45	2,205
9	Koraput	64	24.30	1,144	106	43.28	2,242	167	120.22	3,536
10	Mayurbhanj	91	61.09	2,170	104	87.52	2,605	150	118.19	3,435
11	Puri	53	44.38	833	111	102.09	1,719	212	452.84	4,886
12	Sambalpur	138	73.33	3,478	182	109.56	4,944	281	326.10	7,786
13	Sundargarh	94	46.43	3,333	134	109.80	4,218	226	265.85	6,794
Total		1,059	545.33	19,518	1,687	1,013.79	31,581	2,848	2,622.90	58,007

APPENDIX III (Contd.)

Livestock and Leather

Sl. No.	District	By the end of 1978-79			During 1979-80			During 1980-81			
		No. (111)	Capital (112)	Employment (113)	No. (114)	Capital (115)	Employment (116)	No. (117)	Capital (118)	Employment (119)	
(1)	(2)										
1	Baleswar	..	3	2.30	22	1	0.43	4	1	1.52	6
2	Balangir	..	6	16.12	126	..	..	..	1	0.12	3
3	Phulabani	..	13	5.10	49	1	0.13	3	1	0.08	3
4	Cuttack	..	9	12.09	97	5	0.69	23	5	1.79	27
5	Dhenkanal	..	1	0.42	9	..	..	..	..	..	..
6	Ganjam	..	8	0.45	43	1	0.24	4	1	0.08	3
7	Kalahandi	..	3	2.90	25	1	0.05	2	1	0.03	3
8	Kendujhar	..	7	1.73	44	1	0.28	9	..	..	..
9	Koraput	..	8	2.45	23	..	..	..	..	..	..
10	Mayurbhanj	..	2	1.34	18	3	0.18	10	1	0.35	5
11	Puri	..	5	12.26	59	2	0.81	9	3	0.07	12
12	Sambalpur	..	14	4.88	67	3	0.76	13	..	..	..
13	Sundargarh	..	2	1.04	17	..	..	..	2	0.62	11
..	Total	..	81	63.08	599	18	3.57	77	16	4.66	73

APPENDIX III

Sl. No.	District	By the end of 1980-81			By the end of 1982-83			By the end of 1985-86		
		No.	Capital	Employment	No.	Capital	Employment	No.	Capital	Employment
(1)	(2)	(120)	(121)	(122)	(123)	(124)	(125)	(126)	(127)	(128)
1	Baleswar	5	4.25	32	6	4.48	43	10	5.18	53
2	Balangir	7	16.24	129	9	18.01	148	15	20.09	174
3	Phulabani	15	5.31	55	16	4.21	65	19	5.78	66
4	Cuttack	19	14.57	147	26	20.89	189	46	32.07	306
5	Dhenkanal	1	0.42	9	6	1.09	56	7	1.56	62
6	Ganjam	10	2.77	50	17	4.33	16	22	4.99	100
7	Kalahandi	5	2.98	30	11	5.14	67	13	4.01	59
8	Kendujhar	8	2.01	53	16	4.01	77	16	4.03	78
9	Koraput	8	2.45	23	9	2.71	26	15	3.48	42
10	Mayurbhanj	6	1.87	33	9	2.36	61	19	10.32	99
11	Puri	10	13.14	80	13	13.93	105	18	48.05	143
12	Sambalpur	17	5.64	80	21	6.45	93	24	6.97	115
13	Sundargarh	4	1.66	28	10	2.84	48	14	3.45	60
	Total	115	71.31	749	169	90.45	1,054	234	149.98	1,367

APPENDIX III (Contd.)

Sl. No.	District	By the end of 1980-81			By the end of 1982-83			By the end of 1985-86			
		No.	Capital	Employment	No.	Capital	Employment	No.	Capital	Employment	
(1)	(2)	(138)	(139)	(140)	(141)	(142)	(143)	(144)	(145)	(146)	
1	Baleshwar	..	29	6.87	140	90	31.37	389	231	111.83	1,081
2	Balangir	..	78	31.88	1094	148	88.24	2,014	274	172.83	3,540
3	Phulabani	..	8	0.64	31	31	4.80	173	89	14.63	380
4	Cuttack	..	114	39.16	841	293	138.54	2,066	690	396.10	4,715
5	Dhenkanal	..	76	13.32	380	124	44.07	670	282	117.07	1,354
6	Ganjam	..	71	37.01	408	123	57.31	598	234	104.04	1,108
7	Kalahandi	..	64	6.20	372	147	26.71	952	233	55.74	1,673
8	Kendujhar	..	34	24.86	181	89	43.82	393	203	54.52	778
9	Koraput	..	44	6.02	225	63	8.34	291	124	20.75	602
10	Mayurbhanj	..	81	13.47	327	209	27.70	799	379	48.12	1,317
11	Puri	..	73	30.21	957	158	53.11	1,350	260	181.71	2,337
12	Sambalpur	..	32	7.23	204	98	22.99	472	159	49.94	889
13	Sundargarh	..	33	15.38	166	74	25.14	310	136	39.33	552
..	Total	..	737	232.27	5,326	1647	572.14	10,477	3,294	1366.61	20,326

APPENDIX III (Contd.)

Miscellaneous and Services*

Sl. No.	District	By the end of 1978-79			During 1979-80			During 1980-81		
		No.	Capital	Employment	No.	Capital	Employment	No.	Capital	Employment
(1)	(2)	(147)	(148)	(149)	(150)	(151)	(152)	(153)	(154)	(155)
1	Baleshwar	..	64	13.61	259	22	1.11	50	2.12	21
2	Balangir	..	56	13.14	521	1	0.41	7	3.63	49
3	Phulabani	..	10	0.77	35	18	1.30	52	0.57	31
4	Cuttack	..	137	92.54	904	41	23.86	214	31.89	261
5	Dhenkanal	..	56	17.73	244	8	1.38	24	3.58	79
6	Ganjam	..	70	11.13	274	36	12.56	150	1.68	88
7	Kalahandi	..	64	11.38	588	15	2.29	47	10.12	92
8	Kandujhar	..	70	14.58	260	15	4.62	80	4.32	59
9	Koraput	..	92	17.06	376	26	2.88	115	3.13	96
10	Mayurbhanj	..	65	30.40	271	14	2.80	56	3.60	114
11	Puri	..	50	30.09	299	27	10.00	99	7.90	78
12	Sambalpur	..	43	16.72	177	34	12.05	105	4.95	109
13	Sundargarh	..	101	54.21	595	13	9.08	60	4.55	57
Total		878	316.36	4,803	270	84.84	1,059	297	82.04	1,134

Changed as Miscellaneous Manufacturing since 1985-86

APPENDIX III (Contd.)

Sl. No.	District	By the end of 1980-81			By the end of 1982-83			By the end of 1985-86			
		No.	Capital	Employment	No.	Capital	Employment	No.	Capital	Employment	
(1)	(2)	(156)	(157)	(158)	(159)	(160)	(161)	(162)	(163)	(164)	
1	Baleshwar	..	95	16.84	330	129	27.36	436	82	98.17	416
2	Balangir	..	63	17.18	577	75	25.59	472	33	53.48	205
3	Phulabani	..	36	2.64	118	65	9.96	195	32	19.06	109
4	Cuttack	..	243	148.29	1,379	467	321.59	2,432	388	463.98	2,454
5	Dhenkanal	..	71	22.69	347	119	36.65	522	82	160.02	499
6	Ganjam	..	130	25.37	512	212	97.27	827	137	264.47	774
7	Kalahandi	..	94	24.29	727	155	38.05	858	74	91.37	411
8	Kendujhar	..	102	23.72	396	205	36.31	699	67	22.40	270
9	Koreput	..	146	23.07	587	230	71.50	901	103	110.58	463
10	Mayurbhanj	..	127	30.80	441	251	48.66	767	104	112.01	421
11	Puri	..	104	47.99	476	168	107.37	783	179	533.81	1,244
12	Sambalpur	..	108	33.72	391	175	72.39	735	140	90.16	664
13	Sundargarh	..	124	67.84	712	236	141.18	1,075	160	291.52	1,393
..	Total	..	1,443	484.44	6,993	2,487	1,033.88	10,702	1,581	2,311.03	9,323

APPENDIX III (Contd.)

By the end of 1985-86

Sl. No.	District	Rubber and Plastic*			Paper and Paper Products**			Servicing and Repairing***		
		No.	Capital	Employment	No.	Capital	Employment	No.	Capital	Employment
(1)	(2)	(165)	(166)	(167)	(168)	(169)	(170)	(171)	(172)	(173)
1	Balashwar	..	114.26	289	55	38.18	270	131	62.07	446
2	Balangir	..	9.08	88	28	41.31	294	102	27.78	716
3	Phulabani	..	6.88	38	12	4.26	49	101	13.11	277
4	Cuttack	..	274.15	613	391	388.60	2,611	447	194.98	1,984
5	Dhenkanal	..	13.75	88	39	131.15	413	198	49.70	725
6	Ganjam	..	29.42	185	64	42.81	335	247	59.52	812
7	Kalahandi	..	28.36	130	27	29.23	164	204	57.35	970
8	Kendujhar	..	11.58	95	22	12.78	123	242	37.30	699
9	Koraput	..	11.73	188	37	34.60	193	337	70.60	1,067
10	Mayurbhanj	..	116.01	162	18	8.43	71	407	65.83	1,057
11	Puri	..	328.65	508	121	213.64	734	175	149.54	754
12	Sambalpur	..	29.96	211	65	44.32	333	284	86.08	829
13	Sundargarh	..	109.04	413	81	90.39	540	375	73.59	1,221
Total		571	1082.87	3,008	960	1079.70	6,130	3,250	947.75	11,557

* Separated from Chemicals and Allied

** Separated from Forest and Wood-based

*** Separated from Misc. and Servicing

APPENDIX III (Contd.)

TOTAL

Sl. No.	District	By the end of 1978-79		During 1979-80		During 1980-81					
		No.	Capital Employ-ment	No.	Capital Employ-ment	No.	Capital Employ-ment				
(1)	(2)	(174)	(175)	(176)	(177)	(178)	(179)	(180)	(181)	(182)	
1	Baleshwar	..	700	551.84	5,675	134	55.39	653	122	47.59	689
2	Balangir	..	541	272.74	3,667	83	55.79	916	91	66.51	955
3	Phulabani	..	144	31.60	746	67	11.77	359	54	15.72	346
4	Cuttack	..	1,214	1,147.39	10,861	401	242.48	2,516	428	364.78	3,308
5	Dhenkanal	..	418	241.25	2,531	100	35.70	440	110	85.29	875
6	Ganjam	..	748	321.08	4,756	267	89.08	1,368	230	129.90	1,495
7	Kalahandi	..	253	277.50	2,900	93	38.23	542	101	42.01	485
8	Kendujhar	..	352	115.49	1,724	105	60.73	667	85	24.54	431
9	Koraput	..	579	274.50	3,845	122	31.32	902	156	60.66	899
10	Mayurbhanj	..	385	216.22	3,639	155	51.67	685	165	100.12	847
11	Puri	..	500	635.06	5,022	166	123.62	1,123	166	121.74	1,039
12	Sambalpur	..	770	798.20	7,895	198	88.04	1,550	128	63.73	1,238
13	Sundargarh	..	695	1,026.02	9,319	129	102.83	1,498	167	178.93	2,237
..	Total	..	7,079	5,908.89	62,579	2,020	986.65	13,219	2,003	1,310.52	14,844

APPENDIX III (Concd.)

Sl. No.	District	By the end of 1980-81			By the end of 1982-83			By the end of 1985-86			
		No.	Capital	Employment	No.	Capital	Employment	No.	Capital	Employment	
(1)	(2)	(183)	(184)	(185)	(186)	(187)	(188)	(189)	(190)	(191)	
1	Baleswar	..	956	654.82	7,017	1,357	849.96	9,638	1,990	1,533.50	13,224
2	Balangir	..	515	395.04	5,538	776	609.02	7,511	1,260	1,218.33	11,244
3	Phulabani	..	265	39.09	1,450	431	168.12	3,008	743	252.92	4,687
4	Cuttack	..	2,043	1,754.65	16,685	3,235	3,027.49	24,798	5,311	5,334.13	39,627
5	Dhenkanal	..	628	362.24	3,846	1,000	654.74	6,578	1,713	1,408.71	13,914
6	Ganjam	..	1,245	540.06	7,619	1,801	935.78	11,183	2,796	1,863.14	18,473
7	Kalahandi	..	447	357.74	3,927	747	489.80	5,629	1,243	835.33	8,619
8	Kendujhar	..	542	200.76	2,822	832	275.87	4,171	1,274	458.60	6,840
9	Koraput	..	857	366.48	5,646	1,208	543.49	8,475	1,833	1,013.25	12,026
10	Mayurbhanj	..	705	368.01	5,171	1,142	540.30	7,098	1,858	933.55	10,211
11	Puri	..	832	880.42	7,184	1,394	1,486.07	10,774	2,334	4,748.03	20,418
12	Sambalpur	..	1,096	949.97	10,683	1,451	1,162.34	13,654	2,142	1,806.26	18,977
13	Sundargarh	..	991	1,316.78	10,054	1,528	2,005.82	18,792	2,422	3,482.00	27,455
..	Total	..	11,122	8,206.06	90,642	16,902	12,749.30	1,31,309	26,919	24,887.75	2,05,515

Source : Directorate of Industries, Orissa, Cuttack

CHAPTER III

BANKING, TRADE AND COMMERCE

1. BANKING AND FINANCE

History of indigenous Banking in the State

According to the Central Banking Enquiry Committee (1931) and the Banking Commission (1972), an indigenous banker is any individual or private firm receiving deposits and dealing in hundis or lending money. They are different from money-lenders in one vital aspect. Like money-lenders they also lend their own money, but unlike them indigenous bankers accept deposits and deal in hundis. Indigenous banking is purely a family business conducted along hereditary caste basis. The Jains, the Marwaris, the Chettis, the Khatris and the Sikarpuri Multanis are the principal castes engaged in indigenous banking in some places in India. Neither the Central Banking Enquiry Committee nor the Banking Commission could find any evidence of any such indigenous banker operating in Orissa. Orissa till recently was very much backward in trade and commerce. Banking—indigenous or modern—appears only when trade and commerce reach an advanced stage of development. As such, there is nothing surprising that indigenous banking practices did not develop in Orissa which entered into commercial phase only in the later half of the twentieth century.

General credit facilities available

Indebtedness, prevalence of usury, role of private money-lenders and financiers

Agriculture is the mainstay of the people of Orissa. Flood, drought, cyclone and other natural calamities, more often than not cause damage to standing crops and ruin the cultivating families. Uneconomic holdings coupled with unscientific traditional farming practices do not promise a good income to the agriculturists. These factors account for indebtedness of rural agricultural families. It is said that the peasant is born in debt, lives in debt and dies in debt.

It is difficult to assess the extent of indebtedness of farming families. An economic survey conducted by the Government of Orissa in 1954-55 brought out some characteristic feature of rural indebtedness. On the basis of the outstanding debt, the survey indicated that 39 per cent of rural families were in debt. This appears to be an under-estimate in view of widespread prevalence of indebtedness in rural areas. Many farming families incur loans, but

pay them off by the end of the year. Since they have no outstanding debt, their case was not covered by the survey in question. The survey revealed that loan was mostly incurred for unproductive purposes. Of the total debt, as high as 27.12 per cent was for consumption while another 25.60 per cent was to meet expenses of social ceremonies. For the payment of old debts and to meet the expenses of litigation together accounted for 4.51 per cent of total debt. Thus, 57.23 per cent of total debt was meant for unproductive purposes. Of productive purposes, farm expenditure accounted for 8.87 per cent, purchase of land, bullocks, etc., for 19.42 per cent, 6.24 per cent for building houses, 5.25 per cent for business and 2.98 per cent was for other purposes.

The survey indicated that the money-lenders were the principal source of rural credit. The survey indicated that 87.35 per cent of the total debt was obtained from money-lenders, whereas the debts from Government accounted for 4.45 per cent, co-operative banks 3.61 per cent and the commercial banks 0.17 per cent. Friends and relatives and some other miscellaneous sources provided the remaining part of the total debt.

The survey further revealed the wide prevalence of usury. Of the total debt, 8.49 per cent carried 50 per cent and above rate of interest. As high as 41.47 per cent carried 25 per cent interest and 3.41 per cent carried 37.5 per cent interest. Thus, for Orissa as a whole 53.37 per cent of total debt carried interest of 25 per cent and more. Borrowers could obtain only 1.80 per cent of total debt at 3.5 per cent, 4.97 per cent at 6.25 per cent, 4.75 per cent at 9.5 per cent and 11.50 per cent at 12.5 per cent.

All India Debt and Investment Survey, 1971-72

All India Debt and Investment Survey, 1971-72 conducted by the Reserve Bank of India has given a broad picture of rural indebtedness in Orissa. According to the survey, indebtedness per household in Orissa was Rs. 201.88 out of which cash liabilities were Rs. 165.80 and liabilities in kind were Rs. 36.08. The liabilities of a cultivator household stood at Rs. 234.98 out of which cash indebtedness was Rs. 189.33 and indebtedness in kind was Rs. 45.64. The agricultural labourers also borrowed; but their indebtedness was low. The total indebtedness per agricultural labour household was only Rs. 45.70 divided into cash indebtedness of Rs. 36.09 and kind indebtedness of Rs. 9.61. The indebtedness of an artisan household was estimated at Rs. 51.96 out of which cash indebtedness was Rs. 43.93

and obligation in kind was Rs. 8.02. The liabilities per other non-cultivator household stood at Rs. 156.53 of which obligation in cash was Rs. 153.55 and obligation in kind was Rs. 2.98. Looking at all non-cultivators together, the survey found that indebtedness of such households was low. The indebtedness of a non-cultivator household was Rs. 89.93 of which cash obligation was Rs. 83.06 while the obligation in kind was Rs. 6.88. The survey thus showed that all types of rural households were borrowers, although the extent of indebtedness of cultivator household was larger than that of non-cultivator household.

Sources of credit

In spite of the expansion of co-operative institutions and commercial banking, private money-lenders and merchants provide the bulk of agricultural credit. It is estimated that the traditional sources (money-lenders and merchants) provide 82 to 85 per cent of farmer's requirements. Money-lenders charge very high rates of interest and take recourse to many unfair practices to exploit the poor borrowers. They do not follow any regular system of accounting, do not give regular receipts of money received and often take bonds for higher amounts than the sum lent. Merchants who are also lenders lend on advances for products, but pay a very low price for the products. In spite of such difficulties, rural households mainly depend upon such sources of credit, because it is simple, convenient and time-honoured. The borrower can approach the money-lender or the merchant direct and there is not much of formalities involved to receive a loan. Money-lenders also lend irrespective of purpose for which a loan is sought.

Since it was realised that it would not be possible to do away with money-lenders and merchants as sources of rural credit, attempts have been made to regulate their mischievous activities. The Orissa Money-lender's Act, 1939 requires the money-lender to register and to obtain a licence for carrying on his business. He is also required to maintain regular account books and to submit the statement of accounts to the licensing authority. The rate of interest to be charged by him is also prescribed by the Act. To regulate money lending in tribal areas, the State Government have also prescribed provisions similar to the Orissa Money-lender's Act, 1939 which is known as Regulation 68. The Orissa Debt Relief Act, 1980 came into force with effect from the 13th March, 1981 which aimed at liquidating the old debts and the interest there of, if any. A detailed discussion on the Act has been done in Social Welfare section of Chapter VI (Social Services). By the end of 1979,

money-lenders registered under the Act stood at 12,098 while the number registered under the Regulation was 174. It is needless to mention that the number registered is too small in view of widespread prevalence of private money lending throughout the state. The number of registered money-lenders under the Act in November 1986 was 6,133.

Institutional sources presently provide not more than 15 to 19 per cent of the farmer's requirements. Of this only 3 per cent comes from commercial banks, although they are making efforts to enlarge their share. The institutional credit structure comprises the multipurpose co-operative societies and co-operative banks for short-term production credit, the Land Development Banks for medium and long term lending, the commercial banks mainly for short term but with some medium term lending. The position of such institutional sources of credit is given in the paragraphs to follow.

Joint-stock Banks

Joint-stock banks, otherwise known as commercial banks, are 'comparative novelties' in Orissa. Although some such banks appeared in the early part of this century (Puri Bank at Puri in 1906) their presence was not felt till 1960s'. The Bureau of Economics and Statistics, Orissa, reporting in 1965-66 observed, "Four Scheduled banks, viz., the State Bank of India, the Central Bank of India, the Punjab National Bank and the United Bank of India are operating in Orissa. These Scheduled banks have in all 41 branches throughout the State¹". In July 1969 when fourteen major commercial banks were nationalised the number of branches stood at 100. Only 25 of such branches were in rural areas and the rest were in the semi-urban and urban centres. These banks and their branches mostly financed 'trade', and to a limited extent 'industry'.

After nationalisation in 1969, commercial banks in Orissa as elsewhere in India have become as much a part of market economy as of the planning mechanism of the country. In order that banks may become 'instruments' of development, they acquired such special features as would make them quite different from what they were earlier. In the first place, branches of the bank were opened in unbanked/underbanked areas so as to reduce imbalances, particularly

1. Bureau of Economics and Statistics: Economic Review of Orissa, 1965-66; p. 40. (now renamed as Directorate of Economics & Statistics.)

between rural and urban areas. The number of branches increased from 100 in 1969 to 164 by the end of 1970, to 350 by 1975, to 698 by 1978 and to 718 by June 30, 1979⁽¹⁾. Such rapid expansion of branches was mostly due to ruralising the commercial banking structure. While there were only 25 branches in rural areas in 1962, the number of such branches rose to 450 by 30th June, 1979. Thus while in 1969 rural branches constituted only 25 per cent of the total (i.e. 100), in June 1979 they formed 62.6 per cent of the total (i.e., 718). With the expansion of the branches, deposits and advances rose steadily at a quick pace as well. While total deposits were Rs. 35.96 lakhs in 1969, they rose to 127.82 lakhs in 1975, to Rs. 162.31 lakhs in 1976, to Rs. 201.04 lakhs in 1977 and to Rs. 263.62 lakhs in 1978⁽²⁾. Advances in corresponding years were Rs. 17.79 lakhs, Rs. 59.98 lakhs, Rs. 84.62 lakhs, Rs. 115.62 lakhs, and Rs. 153.56 lakhs⁽³⁾. Secondly, the commercial banks fulfilled their 'social obligations' by increasing their advances to priority sectors, such as, agriculture, small scale industries, transport, retail trade and small business, professionals and self-employed persons and education. While priority sector advances as percentage to total advances as at the end of June 1969 was 14.6, it rose to 25.5 at the end of June, 1976; to 29.9 at the end of June, 1978 and to 32.0 at the end of December, 1978⁽⁴⁾. Thus joint-stock banks in Orissa keeping with the All-India trend, provide credit not only to their traditional sectors, but also to sectors declared 'priority sectors' by the Government. Two other new features in commercial banking credit are also worth mentioning. Of them, "the Lead Bank Scheme" initiated in 1969 is a landmark in the history of India's banking development. By changing the age-old practice of each bank functioning in isolation, this scheme has given a new direction to the role of public sector banks as effective instruments in the growth process of the economy. A lead bank acts as the leader of the consortium of banks within the lead district. It identifies the growth potential of the district, estimates its territorial and functional credit gaps, and devises ways and means to mobilise deposits in surplus areas so as to meet the requirements of the

1. By June 1985, the number of commercial banks has increased to 1701 including 750 Regional Rural Banks.
2. Total deposits as on the 30th June, 1985 was Rs. 957.73 lakhs.
3. Total advances as on the 30th June, 1985 was Rs. 1,017.22 lakhs.
4. The percentage of advances to priority sectors as on 30th June, 1985 was 67.08 per cent.

scarcity areas. The Lead Bank Scheme with such objectives operates in all the 13 districts of Orissa. Bank-wise allocation of leads banks for the district is given in Table 1.

TABLE 1
Lead Banks in Orissa

Lead Bank	Districts
1. State Bank of India	Balangir, Phulabani, Koraput, Kalahandi, Sambalpur and Sundargarh
2. Bank of India	Kendujhar and Mayurbhanj
3. United Commercial Bank of India	Baleshwar, Cuttack, Puri and Dhenkanal
4. Andhra Bank Ltd.	Ganjam

The other feature is the device of Regional Rural Bank introduced in 1975. Public sector banks sponsor Regional Rural Banks which are meant for providing credit and other facilities to small and marginal farmers, agricultural labourers, artisans and small entrepreneurs. The disposal and coverage of Regional Rural Banks in Orissa as at the end of 1978 are given in Table 2.*

TABLE 2
Regional Rural Banks in Orissa

Name of the Regional Rural Bank	Sponsor Bank	District/Districts covered
1. Puri Gramya Bank	Indian Overseas Bank	Puri
2. Balangir Anchalik Gramya Bank	State Bank of India	Balangir and Sambalpur
3. Cuttack Gramya Bank	United Commercial Bank	Cuttack
4. Koraput Panchabati Gramya Bank	State Bank of India	Koraput

*By the 30th June 1985 the position has substantially changed as shown in the Table 2 (A).

TABLE 2 (A)

Name of the Regional Rural Banks	District/Districts covered	Number of branches
1. Baitarani Gramya Bank	Kendujhar and Mayurbhanj	79
2. Baleshwar Gramya Bank	Baleshwar	58
3. Balangir Anchalik Gramya Bank	Balangir and Sundargarh	140
4. Cuttack Gramya Bank	Cuttack	120
5. Dhenkanal Gramya Bank	Dhenkanal	44
6. Kalahandi Gramya Bank	Kalahandi and Phulabani	55
7. Koraput Gramya Bank	Koraput	87
8. Puri Gramya Bank	Puri	100
9. Rushikulya Gramya Bank	Ganjam	67
Total		750

The number of branches operated by these Rural Regional Banks at the end of 1978 is given in Table 3.

TABLE 3

Regional Rural Banks and their number of branches

Name of the Bank	No. of branches
1. Puri Gramya Bank	32
2. Balangir Anchalik Gramya Bank	45
3. Cuttack Gramya Bank	29
4. Koraput Panchabati Gramya Bank	40
Total	146

Distribution of Commercial Banks

With the increase in the number of offices of the commercial banks in the state, population per office in the average has considerably declined. While in 1969 there was one office for a population of 2,12,000, in June 1977 one office functioned for a population of 54,000. Table 4 shows the district wise distribution of offices of commercial banks with population covered by an office on the average.

TABLE 4
Distribution of Commercial Banks in Orissa

Sl. No.	Name of the district	Number of offices of Commercial Banks				Population per bank (in thousands)		
		June 1969	March 1975	June 1977	(5)	June 1969	March 1975	June 1977
1	(2)	(3)	(4)	(5)	(5)	(6)	(7)	(8)
1	Balashwar	..	..	..	..	..	..	..
2	Balangir	..	..	..	..	..	..	..
3	Cuttack	..	..	..	..	..	..	..
4	Dhenkanal	..	..	..	..	..	..	..
5	Ganjam	..	..	..	..	..	..	..
6	Kalahandi	..	..	..	..	..	..	..
7	Kendulhar	..	..	..	..	..	..	..
8	Koraput	..	..	..	..	..	..	..
9	Mayurbhanj	..	..	..	..	..	..	..
10	Phulabani	..	..	..	..	..	..	..
11	Puri	..	..	..	..	..	..	..
12	Sambalpur	..	..	..	..	..	..	..
13	Sundargarh	..	..	..	..	..	..	..
	Orissa	100	295	463 (1505)		212	74	54

Source : Department of Banking Operations, Reserve Bank of India, Bhubaneswar

* Figures within brackets represent the number of offices of commercial banks including Regional Rural Banks as on 30th September, 1984.

** : Population per bank in Orissa from 1978 to 1984 is as follows :

1978 (39), 1979 (36), 1980 (31), 1981 (27), 1982 (21), 1983 (21) and 1984 (15.4)

The movement of deposits and advances of commercial banks in Orissa is shown in Table 5.

TABLE 5
Deposits and Advances of Scheduled commercial
banks as on December of every year in Orissa*

(Rs. in crores)

Year		Deposits	Advances	Credit- Deposit Ratio
(1)		(2)	(3)	(4)
1969	..	35.9	17.8	49.6
1970	..	46.2	25.3	54.8
1971	..	56.2	25.6	45.6
1972	..	63.2	29.1	46.0
1973	..	77.6	40.5	52.2
1974	..	99.1	51.6	52.0
1975	..	127.8	60.0	46.9
1976	..	162.8	84.8	52.1
1977	..	201.0	115.6	57.5
1978	..	217.4	132.2	60.8

Source : Banking Statistics : Reserve Bank of India

Loan and Investment Companies

Some companies have been working in the state to mobilise small savings by offering attractive terms including prize schemes. These companies choose the safest line of investment by investing their funds in Government securities, Government and Public Sector concerns and in the form of fixed deposits in commercial banks.

*. Corresponding figures of Table 5 for 1979 to 1984 are as follows :

1979	..	283.5	181.9	64.2
1980	..	358.3	219.1	61.1
1981	..	468.8	323.1	68.9
1982	..	525.8	402.1	76.5
1983	..	627.4	533.4	85.0
1984	..	947.68	959.75	101.27

The companies doing such business and registered in Orissa by the end of 1979 are given below.

Loan and Investment Companies registered in Orissa

1. Orissa Savings and Finance Co. (Pvt.) Ltd. Chandini Chowk, Cuttack.
2. Canara Finance and Trading Co. (Pvt.), Ltd., Kazi Bazar, Cuttack.
3. Bright Future Finance (Chit) and Trading Co. (Pvt.) Ltd., Jaypur, Koraput district.
4. Rural Savings and Investments (Pvt.) Ltd., Kendujhar, Kendujhar district.
5. Sivamani Investment and Finance Co. (Pvt.) Ltd. Sivamani Bhavan, Ranihat, Cuttack.
6. Janata Finance (Chit) and Trading Co. (Pvt.) Ltd., Jaypur, Koraput.
7. Jay Jagannath General Finance and Investment Co. Ltd., Jagannath Krupa, Jobra Road, Cuttack.
8. Janasakti Savings and Investment Co. (India) Ltd., Daraghabazar, Cuttack.
9. Indian Commercial Finance Ltd., Haripur Road, Cuttack.

Some companies registered outside the state are also doing similar business in Orissa. Some such companies are (1) The Peerless General Finance and Investment Co. Ltd., (2) The Janapriya Finance and Industrial Investment (India) Ltd., (3) Favourite Small Investment Ltd., and (4) Gujarat Savings.

Co-operative Credit Societies and Banks

Co-operative Credit Societies and Banks are constituted under the Orissa Co-operative Societies Act (1962), as amended from time to time. The co-operative credit institutions provide short, medium and long term credits mainly to agricultural, and to a few non-agricultural sectors.

Short Term and Medium Term Credit

The short term and medium term co-operative credits operate through a three-tier institutional framework. At the apex stands the Orissa State Co-operative Bank Ltd., with the whole of the state as its jurisdiction. It has been functioning since the 2nd April 1948. Its share capital which was only Rs. 5 lakhs in 1950-51 grew to Rs. 27.20 millions by 1978-79 and to Rs. 70.80 millions in 1983-84. It advanced a total loan of Rs. 423.22 millions during 1978-79 (Rs. 1329.50 millions)* of which short term loan was Rs. 343.30 (1115.70) millions and medium term Rs. 79.92 (213.80) millions. Its total deposits stood at Rs. 232.04 (298.60) millions on the 30th June, 1979. Its credit is available to both agricultural and non-agricultural sectors through Central Co-operative Banks.

The Central Co-operative Banks lie at the intermediate level of the co-operative credit structure. Their number was 17 (17) in 1979-80. Every district has a Central co-op. Bank excepting Puri which has three such banks, and Cuttack and Ganjam have 2 each. They advance both short and medium term loans to primary societies for agricultural as well as non-agricultural purposes. Their combined share capital in 1978-79 stood at Rs. 101.94 (218.90) millions. They advanced short term loan amounting to Rs. 349.87 (1087.20) millions and medium term loan amounting to Rs. 127.47 (327.50) millions during 1978-79. Their combined deposits stood at Rs. 275.03 (595.90) millions on the 30th June 1979.

Primary credit societies form the lowest rung of the co-operative superstructure. They are of two types; agricultural and non-agricultural. The Primary Agricultural credit co-operatives in the state are of three types. P.A.C.S. (Primary Agricultural Co-operative Credit Societies), L.A.M.P.S. (Largesized Agricultural Multipurpose Societies) and F.S.S. (Farmer's Service Societies). L.A.M.P.S. are designed to provide package services to farmers in tribal areas. The main components of the package are : short, medium and long term credit; consumption credit, supply of agricultural inputs, supply of consumer goods and marketing of both agricultural and minor forest produce. F.S.S. are similarly intended to provide integrated credit and service to small and marginal farmers and landless labourers of non-tribal areas. During 1978-79 there were 3151 (2795) P.A.C.S. including 223 (222) L.A.M.P.S. and 5 (7) F.S.S.. The membership of these societies was 2.20 millions which constituted

*Figures in brackets relate to the co-operative year 1983-84, ending on the 30th June, 1984.

61 per cent of agricultural families in the state. The P.A.C.S. advanced short term loan amounting to 306.91 millions and medium term loan of 87.68 millions during 1977-78.

Long Term Credit

At the head of long term co-operative credit structure stands the Orissa State Co-operative Land Development Bank Ltd. The Bank started functioning in 1938-39 bearing the name Orissa Provincial Land Mortgage Bank Ltd. The name was subsequently changed to its present nomenclature. This bank with ten branches finances and supervises its 54 affiliated Primary Land Development Banks at subdivisonal level. These banks provide long term finance to the farmers for such purposes as levelling, contour bunding, excavation of tanks, sinking of tube-wells, purchase of agricultural implements, such as, tractors, power-tillers, pump sets, etc. The Primary Land Development Banks are administratively independent, but their lending policy and criteria are fixed by the State Land Development Bank which provides almost all their financial resources. The State Land Development Bank advanced long term credit amounting to 79.30 millions and the loan advanced by the Primary Land Development Banks amounted to 82.01 millions during 1978-79.

Poor rate of loan recovery resulting in heavy overdues has weakened the co-operative credit institution. Pattern of overdues during 1978-79 is given below.

Overdues of Short and Medium Term Credit

Level	Demand (Rs. in millions)	Collection (Rs. in millions)	Percentage of overdue
(1)	(2)	(3)	(4)
Central Banks	401.91	220.92	33
Primary Societies	484.58	278.48	43

Overdues of Long Term Credit

Primary Land Development Banks	114.54	61.80	46
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Such overdues, among other things, have restricted borrowing by Central Co-operative Banks and Land Development Banks from the Reserve Bank of India and the Agricultural Refinance and Development Corporation.

Agricultural Refinance and Development Corporation

Agricultural Refinance and Development Corporation (A. R. D. C.) since renamed as National Bank for Agriculture and Rural Development (NABARD) set up in 1963 is entrusted with the responsibility of providing long term and medium term credit in the form of refinance assistance for development programmes in agriculture and allied activities, such as, dairy, poultry, plantation, horticulture, fisheries, etc. It provides refinance assistance through eligible institutions, viz., State Land Development Bank, State Co-operative Banks, Commercial Banks and Regional Rural Banks. The Orissa Regional Office of A. R. D. C. located at Bhubaneswar looks into A. R. D. C. financing in the state. The A. R. D. C. did not do much in Orissa till 1974-75. It participated in the development programmes of the state in a big way from 1975-76. Two hundred and ninety-one out of 314 Community Development Blocks in Orissa were covered by one or more A. R. D. C. schemes by the 31st December, 1979.

Non-agricultural Credit Co-operatives

Non-agricultural credit co-operatives meet the short and medium term credit needs of the salary and wage-earners and petty businessmen living in urban areas. Such co-operatives are divided into Urban Co-operative Banks, Employee's Credit Societies and other non-agricultural credit societies. In 1977-78, there were 14 (13)* Urban Banks with a working capital of Rs. 482 (1403) lakhs. In the same year the number of Employee's Credit Societies was 269 (794) with a working capital of Rs. 425 (1842) lakhs. Of these non-agricultural credit societies, 8 Urban Banks and 2 Employee's Credit Societies have been declared by the Reserve Bank of India as Primary Co-operative Banks under the Banking Regulation Act.

An overall picture of co-operative credit in Orissa as on 30th June, 1978 is given in Table 6. The purpose-wise classification of short term and medium credit is given in Table 7 and Table 8 show the non-credit activities of agricultural credit societies.

*The figures in brackets relate to 1983-84 co-operative year ending on the 30th June, 1984.

TABLE 6

Co-operative credit in Orissa as on the 30th June 1978 *
(Rs. in lakhs)

Particulars	Number of Banks and Societies	Member- ship	Working capital (Rs.)
(1)	(2)	(3)	(4)
A. Short and Medium Term			
1. O. S. C. B. ..	1 (1)	55 (880)	4,090 (16,775)
2. C. C. Banks ..	17 (17)	5,083 (5,903)	6,784 (24,919)
3. Primary Agricultural Societies			
(i) P.A.C.S. ..	2,923 (2,566)	1,779,000 (2,019,000)	7,960 (21,265)
(ii) LAMPS ..	223 (222)	409,000 (7,12,000)	1,671 (6,049)
(iii) FSS ..	5 (7)	4,009 (16,000)	26 (173)
(iv) Graingola C.S.	102	16,000	56
(v) Total Primary Societies	3,253 (2,795)	22,08,000 (27,47,009)	9,713 (27,487)
4. Non-agricultural Credit Societies			
(i) Urban Bank	14 (13)	51,000 (69,000)	482 (1,403)
(ii) Employees' C.S.	269 (787)	51,000 (1,03,000)	425 (1,823)
(iii) Other Non-agricultural C. S.	10 (7)	1,000 (4,000)	6 (19)
(iv) Total Primary Non-agricultural	293 (807)	103,000 (1,76,000)	913 (3,245)
B. Long Term Credit			
1. O. S. C. L. D. B.	1 (1)	56,000 (55,000)	4,867 (8,803)
2. Primary L.D. Banks	55 (54)	348,000 5,64,000	3,689 (8,026)

* Figures in brackets relate to 1983-84 Co-operative year ending on the 30th June, 1984.

Particulars (1)	Loans		
	Advances (Rs.) (5)	Outstanding (Rs.) (6)	Overdue (Rs.) (7)
A. Short and Medium Term			
1. O. S. C. B. ..	3,365 (13,295)	3,133 (15,014)	2 (2)
2. C. C. Banks ..	4,464 (14,147)	4,949 (19,845)	1,142 (5,106)
3. Primary Agricultural Societies			
(i) P. A. C. S. ..	2,522 (6,939)	4,559 (13,924)	2,077 (5,815)
(ii) LAMPS ...	508 (1,704)	687 (3,434)	193 (1,088)
(iii) FSS ..	13 (24)	12 (101)	3 (77)
(iv) Graingola C. S. ..	1	21	19
(v) Total Primary Societies	3,044 (8,667)	5,279 (17,459)	2,292 (6,980)
4. Non-agricultural Credit Societies			
(i) Urban Bank ..	211 (947)	280 (748)	65 (191)
(ii) Employees' C. S. ..	334 (988)	332 (1,437)	32 (136)
(iii) Other Non-agricultural C. S.	3 (1)	4 (10)	1 (2)
(iv) Total Primary Non-agricultural	548 (1,936)	616 (2,195)	98 (329)
B. Long Term Credit ..			
1. O. S. C. L. D. B. ..	623 (730)	2,964 (6,520)	335 (721)
2. Primary L. D. Banks ..	588 (730)	2,903 (6,148)	183 (481)
			(concl'd.)

TABLE 7

Purpose-wise classification of short term and medium term loans for the year 1977-78

Purpose	Amount (Rs. in lakhs)
(A) Short term	
1 Seasonal agricultural operation ..	2,437
2 Purchase of implements ..	9
3 Other purpose ..	3
Total ..	<u>2,449</u>
(B) Medium Term	
1 Sinking or repair of wells ..	383
2 Purchase of machinery ..	20
3 Purchase of cattle ..	67
4 Minor improvement to land ..	4
5 Conversion of loan ..	25
6 Other agricultural purchase ..	45
7 Other purposes ..	9
Total ..	<u>553</u>

TABLE 8

The non-credit activities of Agricultural Credit Societies in 1977-78

Activities	Value (Rs. in lakhs)
1 Marketing	
Total produce marketed ..	67
2 Distribution	
(a) Farm requisites	
Fertiliser ..	756
Seeds ..	22
Pesticides ..	17
Implements ..	0.7
Others ..	46
Total ..	<u>841.7</u>
(b) Consumer goods	
Foodgrains ..	115
Others ..	325
Total ..	<u>440</u>
Grand total ..	<u>1348.7</u>

Source : Tables 6, 7 and 8 are from Co-operative Movement in Orissa : A profile 1977-78

General and Life Insurance

After the nationalisation of life insurance business in 1956, the Life Insurance Corporation of India through its divisional offices and branch offices undertakes and promotes life insurance business in the state. The entire state of Orissa constitutes one division under the name Cuttack Division. The list of branch offices with territories attached to each branch is given below in Table 9.

TABLE 9
Branch offices of Life Insurance Corporation of India
in Orissa*

Name of the Branch	Territorial Jurisdiction
1 Cuttack	.. Sadar subdivision including Cuttack city common with D. B. O. (excluding Chaudwar and Tangi police-stations. Niali C. D. block of Gobindpur police-station and Barang police-station) and Jagatsinghapur subdivision.
2 Cuttack District	.. Sadar subdivision including Cuttack city common with Cuttack Branch (excluding Chaudwar and Tangi police-stations), Jajpur subdivision and Kendraparha sub-division.
3 Dhenkanal	.. Dhenkanal district and Chaudwar and Tangi police-stations of sadar subdivision and Athagarh sub-division of Cuttack district.
4 Bhubaneshwar	.. Khorda, Bhubaneshwar and Nayagarh subdivisions of Puri district and Banki subdivision of Cuttack district.
5 Puri	.. Puri sadar subdivision
6 Rourkela	.. Sundargarh district
7 Brahmapur	.. Ganjam and Phulabani district
8 Jaypur	.. Koraput district

*By 31st March, 1983, ten more branches, one each in Cuttack town, Kendraparha, Jagatsinghapur, Phulabani, Bhadrak, Baripada, Uditnagar, Baragarh, Bhawanipatna and Nayagarh have been opened with consequential redistribution of jurisdiction to cater to the increasing volume of L. I. C. business in the rural areas.

9	Sambalpur	.. Sambalpur Tahsil of Sambalpur sadar subdivision, Baragarh subdivision, Padmapur subdivision and Redhakhol subdivision of Sambalpur district.
10	Jharsuguda	.. Deogarh and Kuchinda subdivision and Jharsuguda Tahsil of Sambalpur sadar subdivision.
11	Balেশwar	.. Balেশwar district and Baripada and Kaptipada subdivision of Mayurbhanj district.
12	Kendujhar	.. Kendujhar district and Bamanghati and Panchpir subdivisions of Mayurbhanj district.
13	Balangir	.. Balangir and Kalahandi districts

As elsewhere in the country, the Life Insurance Corporation of India undertakes business in respect of individual insurances, group insurance and superannuation schemes in Orissa. Business in force in respect of individual insurance as on the 31st March, 1979 in Orissa and new business done during 1978-79 are given in Table 10.

TABLE 10

Individual Insurance in Orissa

Business in force as on the 31st March 1979

1	Number of policies(in thousands)	.. 297 (413.98)
2	Sums assured with bonuses (in crores of Rs.)	.. 223.54 (441.48)
3	First year and Renewal Premium.. Income (in lakhs of Rs.)	759.73 (1650)

New Business 1978-79

1	Number of proposals	.. 29,797 (60,490)
2	Sums proposed(in crores of Rs.)	.. 31.93 (103.02)
3	Number of policies	.. 29,577 (60,424)
4	Sums assured (in crores of Rs.)	.. 31.54 (102.14)
5	Average sum assured per policy(in Rs.)	10,664 (16,900)
6	First year premium income (in lakhs .. of Rs.)	1,27.54 (152)

Source : L.I.C., 22nd Report, Annexure II, p.27, Figures within brackets relate to the year ending 31st March 1985.

Funds collected through insurance business are invested and lent out in various ways. The L.I.C. invests in public sector, co-operative sector as well as in the private sector. Loans constitute one of the major avenues of investment for the corporation funds. In granting loans, emphasis is given on financing of (a) generation and transmission of electricity for agricultural and industrial use, (b) housing schemes, (c) water supply schemes and sewerage schemes in urban areas and townships, (d) piped water supply scheme in rural areas and (e) industrial development. A comparative picture of investment activities of the corporation in Orissa and in India is given in Table 11.

TABLE 11

Distribution of Investment by L.I.C. as on 31st March 1979**(Rs. in Lakhs)**

Items	India	Orissa
1. Stock Exchange Securities ..	1,38,084.06 (1,87,301.97)	6,726.04 (63,21.80)
2. State Electricity Boards ..	79,180.76 (1,53,351.26)	4,130.00 (7,705.00)
3. State Government for Housing Schemes ..	30,755.50 (51,606.50)	2,255.10 (3,492.10)
4. Co-operative Housing Finance Societies and other Authorities for financing Housing Co-operatives to State Housing Boards.	37,362.00 (73,047.00)	.. (3,000.00)
5. Municipal Committees and State Governments for Urban Water Supply Schemes.	23,417.71 (47,622.59)	308.33 (770.18)
6. Zilla Parishads for Rural Piped Water Supply Schemes.	3,101.32 (7,175.23)	..
7. Sugar Co-operative Societies ..	3,037.00 (3,720.00)	60.00
8. State Road Transport Corporations.	(12,724.00)	(732.00)
9. Industrial Estates ..	1,174.58 (3,144.09)	..
10. Improvement Trusts ..	2.00 (144.00)	..

11. Companies and Industrial Co-operative Societies	16,709.40 (45,563.43)	175.00 (1,166.50)
12. Total book value of Investments and loans outstanding	2,89,821.70 (4,77,213.83)	11,948.97 (16,596.75)
13. Percentage of investments in Orissa to total investments		4.12 (3.48)

Source: Life Insurance Corporation of India, Twenty-second Year Report and Accounts for the year ending 31st March, 1979, p.38, Appendix VI. (Figures within brackets relate to the year ending 31st March, 1984).

General Insurance Corporation of India

Four general insurance companies, viz., the Oriental Fire and General Insurance Company Ltd., the National Insurance Company Ltd., the United India Insurance Company Ltd., and the New India Assurance Company Ltd., are functioning in the state. These companies are doing insurance on fire, burglary, automobiles, etc.

State Assistance to Industrial Development

Under the Orissa State-aid to Industries Act, 1978, the state-aid may be given in all or any of the following terms:

- (a) the grant of a loan;
- (b) the giving of a guarantee in respect of a loan, cash credit, over-draft or fixed advance with a Scheduled Bank, Life Insurance Corporation, Co-operative Society or with the Industrial Financial Corporation of India, the Orissa State Financial Corporation or such other industrial financing agency as may be approved by the State Government;
- (c) the taking of shares or debentures;
- (d) the guarantee of a minimum return on the whole or part of capital of a joint-stock company for a period fixed in accordance with the rules made under the Act.
- (e) the underwriting of the issue of stocks, shares, bonds, or debentures by a limited joint-stock company;
- (f) the grant of favourable terms of land, raw material, fuel, water or any other property or right vested in the State Government subject to the provision of any law, rule or order for the time being in force;

(g) the payment of subsidy—

(1) in the case of small scale or cottage industry, for one or more of the following purposes, namely:—

- (i) the purchase of land, machinery and equipment;
- (ii) the construction of factory buildings, godowns, wells and sheds;
- (iii) technical improvement to the machinery used in the industry;
- (iv) the employment of efficient manager and supervisory personnel for a limited period;
- (v) the training of workers employed in the industry;
- (vi) the conduct of research; or
- (vii) any other purpose as the State Government may, by notification specify;

(2) in case of any other industry, for the conduct of research or purchase of machinery or for any other purpose as the State Government may, by notification, specify;

- (h) the supply of machinery on the hire-purchase system including the guarantee of the price of the machinery and equipment purchased by any industry on hire-purchase agreement from the National Small Scale Industries Corporation or any other concern approved by the State Government;
- (i) the supply of electrical energy at concessional rates from a source which is the property of the State Government or the grant of subsidy or rebate on the rate (including minimum charges) payable by any industry for supply of electricity to it;
- (j) the lending of the services of experts or persons in the service of the Government for starting or advising an industry free of charge or on favourable terms; and
- (k) to any individual, by the grant of a loan for the purpose of investment in the share capital of any co-operative society or any joint-stock company within the meaning of the Companies Act, 1956 engaged in any industry or for the purchase of share held by Government in any Government Company within the meaning of the said Act engaged in any industry,

Concessions and assistance offered by the State Government to industries under the Industrial Policy Resolution, 1977 are as follows:

- (i) The State Government subsidises up to 75 per cent of the cost of preparation of feasibility study or project report, provided it is done through an agency approved by the Industrial Promotion and Investment Corporation of Orissa Ltd.
- (ii) The State Government provides technical guidance for locating industries through a Planning and Design Cell. Such guidance is also offered through the Industrial Promotion and Investment Corporation of Orissa, the Orissa Small Industries Corporation, Orissa Industrial and Technical Consultancy Organisation and the Regional Research Laboratory set up at Bhubaneswar by the Council of Scientific and Industrial Research, Government of India.
- (iii) The State Government provides a cash subsidy of 10 per cent of the capital cost of a project of Rs. 10 lakhs whichever is less for all new as well as expansion of the existing units all over the state, excepting the districts declared by the Government of India as specially backward. In these districts, the units are eligible for 15 per cent cash subsidy from the Central Government.
- (iv) Assistance is also given under the Sales Tax Loan Scheme. This scheme envisages grant of interest-free loan to new industrial units including expansion of existing industrial units to the extent of sales tax paid. The loan will be available at the end of each year during the first five years of production, i. e., from the 2nd year of production to the 6th year of production, subject to the condition that the loan amount in any year shall not exceed 8 per cent of the value of fixed assets of the unit.
- (v) Machinery brought for the purpose of setting up new industries or expansion and renovation of existing industries is exempted from payment of octroi. Raw materials meant for new industries are also exempted from payment of octroi for a period of five years.
- (vi) As regards land, the following concessions are extended;
 - (a) Government land is to be made available at 1/3 of the market rate;

- (b) In growth centres developed plots of land with infrastructural facilities are made available through the IPICOL;
- (c) The Government will take steps to acquire private lands at the cost of the industrial unit concerned.
- (vii) Industrial sheds constructed at Industrial Estates are made available to industrialists on hire or on hire-purchase basis.
- (viii) Concessions in the form of price preference are also allowed to Small scale Industrial Units.
- (ix) Power is supplied at subsidised rates to new industries as well as for expansion of existing industries involving capital investment up to Rs. 25 lakhs.
- (x) Water for industrial purposes is also made available on no profit and no loss basis from the Public Health Department. Industries are allowed the use of water from natural streams and rivers and for the initial period of five years of production there is no payment of any royalty.

In addition to such assistance and concession extended by the State Government some Public Sector Corporations also provide financial and other assistance to the industries in the state. Among them the Industrial Promotion and Investment Corporation of Orissa Ltd. (IPICOL) was set up in 1975 as a promotional institution to undertake promotional activities for the establishment of medium and large industries in joint and private sectors. It participates in shares of Private Sector Projects and advances short term loans to them. It provides bridging finance under a bridge-loan scheme, under which, short term loan is advanced to projects against sanction of financial institutions.

In the private sector, IPICOL sanctioned investment of Rs. 43.92 lakhs up to 1975-76 in 11 projects. During 1976-77 a sum of Rs. 89.99 lakhs was invested in 18 private sector projects. During 1978-79 a total loan of Rs. 36.32 lakhs was sanctioned for 14 private sector projects, seven of which are in backward districts. The corporation also sanctioned equity to the extent of Rs. 21 lakhs for investment in private sector projects. IPICOL operates the Seed Capital Assistance Scheme of Industrial Development Bank of India (IDBI). The corporation set a record among eastern states in sanctioning seed capital amounting to Rs. 22 lakhs under the above scheme during 1978-79. IPICOL also administers incentive schemes such as, subsidy up to 75 per cent for feasibility report, sales tax loan scheme and State Government Cash Subsidy Scheme referred above.

Orissa State Financial Corporation

The Orissa State Financial Corporation (OSFCO) was established in the year 1956 under the State Financial Corporation Act, 1951 which is a Central Act with the main object of providing institutional credit, both long and medium terms to the small scale and medium scale industrial concerns in construction of factory buildings, purchase of plants and machinery, renovation and modernisation of existing plant and machinery, etc. Assistance is also given to purchase land or industrial sheds provided the same are allotted by the Orissa Industrial Infrastructure Development Corporation (IDCO). The Corporation renders financial assistance to the industrial concerns engaged or proposed to be engaged in any of the following activities.

1. The manufacture, reservation or processing of goods
2. Acquisition of equipment for use in mining activities
3. Hotel Industry
4. Transportation of passengers or goods by road or water or air
5. Generation or distribution of electricity or any other form of power. This includes setting up captive bio-gas plants for hotels and also captive bio-gas plants which can generate electricity with a mix of bio-gas and diesel for industrial units.
6. Maintenance, repair, testing or servicing of machinery of any description or vessels or motor boats or trawlers or tractors.
7. Assembling, repairing or packing of any article with the aid of machine to be operated either manually or by use of power.
8. Development of any contiguous area of land in an industrial estate.
9. Fishing or providing shore facilities for fishing or maintenance thereof.
10. Setting up consultancy organisations to provide special or technical knowledge or other services including preparation of project reports for the promotion of industrial growth.

Maximum amount of assistance that can be extended to a single industrial concern is limited to Rs. 30.00 lakhs in case of companies and co-operative societies and Rs. 15.00 lakhs in case of others.

The State Financial Corporation plays an important role for promotion of industries and for removing regional imbalances through forward and backward linkages for which Industrial Development Bank of India has characterised them as Regional Development Banks. It operates various schemes for liberalised finance, such as, technical

intrepreneurs scheme, soft loan scheme and scheme of self-employment of educated unemployed persons and subsidy to backward and no industry districts (NID). Out of 13 districts of the state five districts; namely, Dhenkanal, Mayurbhanj, Kendujhar, Kalahandi and Koraput have been declared as backward districts and three districts; namely, Phulabani, Balangir and Baleshwar have been declared as no industry district (NID) by the Central Government. Industrial units set up in all these 8 districts are eligible to get investment subsidy at different rates. The OSFC acts as an agent of the Central Government for disbursement of the Central Financial subsidy in the backward and no industry districts and as agent of the State Government for disbursement of the state financial subsidy in non-backward districts under the Industrial Policy Resolution of the State Government.

The corporation sanctioned Rs. 5,155.39 lakhs to 2,325 units and disbursed Rs. 3,115.17 lakhs to 1,049 units during 1983-84. In the next year 1984-85 it sanctioned Rs. 5,250.21 lakhs to 2,085 units and disbursed Rs. 3,371.36 lakhs to 755 units. The corporation has also taken various measures to check the growing sickness of assisted industrial units. Till the year 1983-84, 883 industrial units have been identified as sick out of which the Corporation has taken up rehabilitation programme in respect of 63 industrial units of tiny, small scale industries and medium sectors. Cumulative achievement of loans sanctioned, disbursed and outstanding as on the 31st March, 1985 in respect of Small-scale Units and others are given below.

Loan sanctioned				Loan disbursed	
Small Scale		Others		Small Scale	
No.	Amount	No.	Amount	No.	Amount
(1)	(2)	(3)	(4)	(5)	(6)
29,449	23,520.15	237	4,283.08	14,290	15,163.29

Loan disbursed				Loan outstanding	
Others		Small Scale		Others	
No.	Amount	No.	Amount	No.	Amount
(7)	(8)	(9)	(10)	(11)	(12)
103	2,104.51	13,935	12,909.32	96	1,172.02

The Orissa Small Industries Corporation undertakes promotional activities for establishment of Small Scale Industries. It provides seed capital loans to individual entrepreneurs and also provides machinery on hire-purchase basis. It also provides industrial sheds with all infrastructural facilities either on hire or on hire-purchase basis. During 1978-79 the corporation disbursed Rs. 6.08 lakhs towards seed money to 92 entrepreneurs. Various scrap raw materials worth Rs. 143 lakhs were procured by the corporation and distributed to nearly 400 units valued at Rs. 121 lakhs during 1978-79.

Currency and Coinage, right from the earliest times

In early time when there was no circulation of coinage barter system of exchange was in vogue. This system indicates a primitive economy and with the growth of civilization when social needs began to increase this system failed to cater for the increasing requirements. In the Aryan society cow was the medium of exchange and cattle constituted the property of the Aryans. The value of an article could be ascertained after the number of cows paid for its value was known. For example, if the price of an article was ten cows that was called Dasadhenuka. In that way commodities were known as Satadhenuka, Sahasradhenuka, etc. In Orissa cow was also the unit of linear measurement. If a place is equal to the length of hundred cows standing in a row the distance was known as Satadhenuka. With the growth of the society cow as a medium of exchange proved very inconvenient. So a metal piece of certain weight having the value of a cow subsequently became the medium of exchange. That was known as Karshapana, meaning coin weighing one Karsha, about sixty-four Ratis. Rati or Raktika was the unit of measurement and that was the weight of the Gunjaberry seed.

In ancient time gold, silver and copper Karshapana were in prevalence. The standard of weight and measurement was as follows:

One Rati : equal to the weight of one Gunjaberry seed.

Four Ratis : equal to one Masaka. Sixteen Masaka : equal to one Karsha.

This system was current for gold and copper Karshapanas. But the silver Karshapana was equal to thirty-two Masakas because silver was a rare metal in ancient times.

The earliest available coins of India are known as punch-marked coins which were probably Karshapanas. We are getting silver and bronze punch-marked coins in large number in India as well as in Orissa. But gold punch-marked coins have not yet been discovered anywhere in India. In Orissa large hoards of silver punch-marked

coins have been discovered at Kayama hill near Dharmashala (Cuttack district), Jogimara near the Khandagiri hills and Jharapada in Bhubaneswar, in Puri district, Bahalda in Mayurbhanj district and Asurgarh in Kalahandi district. On the obverse there are cluster of symbols punched on the coins and the symbols represent different ideologies. The common symbols are those of the sun, crescent moon, arches on hills, wheel having six hands (Sadara-chakra) tree within railings or without railings, auspicious jars; figures of bulls, lions, elephants, fish and snakes; rabbit jumping on hills, etc. The meaning of these symbols have not yet been explained satisfactorily. Some of these symbols like arches on hills, rabbit jumping on hills are explained as Mauryan symbols. The coins having four symbols on the obverse are regarded by scholars as pre-Mauryan coins. Such coins having four symbols have come to light from Sonapur in Balangir district and Asurgarh in Kalahandi district.

Punch-marked coins continued to be circulated from the 5th Century A. D., as known from the writings of Buddhaghosa. It may be mentioned that large number of punch-marked coins were found in the layer attributed to the 5th Century A. D. in the excavation of Asurgarh conducted by the Sambalpur University in 1973. Gupta gold coins are rarely available in Orissa. One gold coin of Chandra-Gupta II was found at Ratnagiri in Cuttack district. Gold coins of the Sarabhapuriya king named Prasannamatra (6th Century A. D.) were available in large numbers in Nuaparha subdivision of Kalahandi district. Some of these coins are preserved in the Sambalpur University Museum.

Gold coins of the Nala kings who ruled over Bastar and Koraput region have been discovered at Edenga (5th Century A. D.) in Bastar district of Madhya Pradesh.

One gold coin depicting a king riding on horse back on the obverse and the king feeding two peacocks on the reverse has been discovered from Patnagarh in Balangir district. The name of the king written in Brahmi script is read as Rishabhadeva. He has been attributed to the Megha dynasty of Kosala referred to by the Puranas.

Large hoards of copper Kushan coins and imitation Kushan coins have been discovered in the districts of Mayurbhanj, Kendujhar, Cuttack, Puri and Ganjam. These coins are known as Puri Kushan coins as earlier scholars like Hoernle and Rapson explained these coins to be temple offerings at Puri. But as these coins are available in many parts of Orissa and even outside Orissa the views of Hoernle and Rapson are not considered to be tenable.

The Kushan coins depict on the obverse the figures of kings like Kanishka and Huvishka and on the reverse goddesses like Mao, Aepo, Oado, Nana, etc. The imitation coins are smaller in size having symbols not clearly visible. Scholars have attributed the imitation coins to a ruling dynasty called Murunda. In the Sisupalgarh excavation one gold coin was discovered at the layer attributed to 3rd Century A. D. On the obverse of the coin the bust of the king has been depicted and on the reverse his name has been inscribed as Maharaja Rajadhiraja Dharmadamadhara (ଧର୍ମଦାମଧର). The ruler is said to have belonged to the Murunda dynasty.

The Kalachuri kings of Ratnapur ruled over western part of Orissa during 11th-12th Century A. D. Large number of Kalachuri gold coins which were being circulated in Orissa have been discovered from Sonapur. The Kalachuris were defeated by the Gangas who occupied western Orissa early in the 13th Century A. D.

The Ganga rulers circulated small gold coins which are known as Ganga Fanams. Those coins are irregular in shape and weight. The diametre varies from 9 to 10 ml. metres and the weight from 6 to 9 grains. On the obverse we find figures of a recumbent bull facing some symbols and on the reverse there is a symbol read as 'sa' (ସ) meaning Samvatsara. The regnal year of the king is given below the symbol. Large number of such coins have been discovered from Chaudwar and from Sonapur. These coins probably represent Madha described in literature.

Some specimen of gold coins depicting elephant on the obverse and scroll design on the reverse have been discovered which are called Gajapati Pagoda coin by Rapson. It is not yet ascertained whether these coins were being circulated by the Suryavamsi Gajapati kings of Orissa or by the kings of Vijayanagar.

Large number of Mughal coins, both gold and silver, are available in different parts of Orissa. But coins of Humayun are rarely found. Silver coins of the Sharqi Sultan of Jaunpur have been discovered in Sundargarh district and one gold coin of that dynasty has been found in Balangir district. When Orissa was under the Nazims of Bengal silver coins minted at Murshidabad were in circulation in Orissa. These coins were also being circulated when Orissa was under the rule of the Marathas. After the occupation of Orissa by the British, coins of the East India Company were circulated throughout Orissa. It may be said that from the time of the Mughals the coins that were circulated in Orissa were of all-India type and standard and Orissa had transactions of overland trade through Indian medium of exchange.

The common people of Orissa were conducting their day to day business through the medium of cowry currency from the early time till the 19th century. Cowries were being imported from the Laccadive and Maldiv Archipelago in large quantities and that was the main currency for the common people for many centuries. The circulation of cowry currency was suspended in the second half of the 19th century.

In 1858 the role of the East India Company ended and India came under direct administration of the British crown. After that the coins of Queen Victoria were circulated and on the 1st January, 1877 when Her Majesty assumed the title 'Empress of India' the designation of her coins changed accordingly. The coins of the British emperors Edward VII, George V and George VI were circulated till the attainment of independence and these continued to be legal tenders for some years more.

The decimal system of coinage was introduced on the 1st April, 1957 along with British coins. Gradually the British coins were withdrawn from circulation, and the people are now fully adapted to the decimal system of coinage. Coins and paper currency of different denominations of all-India standard are in circulation.

2. TRADE AND COMMERCE

Exports and Imports of Orissa

Orissa constitutes one of the 34 Trade Blocks into which India is divided for the purpose of inland trade statistics. The Department of Commercial Intelligence and Statistics (Calcutta), Ministry of Commerce, Government of India publishes annually "Accounts relating to the Inland (Rail and River-borne) Trade of India" pertaining to each of the Trade Blocks. Appendices I and II show movement of trade by railways and steamer services from and into Orissa respectively for the years 1967-68 to 1976-77. Sixty-seven commodities listed in the two tables are principal commodities of inland trade of India.

Looking at the two tables together, it is seen that Orissa is net exporter in cement, gram and gram products, hides, jute, iron and steel bar, manganese ore, and lime and limestone, while she is net importer in coal and coke, pulses other than grams, gunny bags and clothes, cotton piece goods, cotton, wheat, rapeseed and mustard, sugar, vegetable oils and tobacco.

Orissa is not lagging behind in exporting goods to other countries. Appendix III shows exports from Orissa to other countries during the years 1974-75 to 1976-77. The Appendix III shows that Orissa is exporting metallurgical products, engineering, chemical and allied products, minerals, agricultural and forest products, marine products,

handlooms and handicrafts to many developed and developing countries of the world. It is seen from the Appendix III that export of these commodities maintains an upward trend.

Trade Centres Regulated Markets

The purpose of Regulated Market is to ensure a fair price to the growers of various agricultural produce and to save them from the harassing clutches of the middlemen. In Orissa, the regulation of markets came into force in the year 1958 under the Orissa Agricultural Produce Markets Act, 1956. This Act received the assent of President of India on the 22nd January, 1957 and the first Regulated Market was inaugurated on the 20th November, 1958 at Jatni in Puri district. By the end of 1979, 36 (39) regulated markets were established in various parts of the state. The list of such markets with year of establishment and the commodities to be regulated in each such market is given in Appendix IV. Every regulated market is to have a principal Market Yard and some of them have also sub-market yards. The markets having sub-market yards in addition to the principal market yard is given below:

Regulated Market	Principal Market Yard	Sub-Market Yard
Jatni	Jatni	Harirajpur, Delang, and Pipili
Baragarh	Baragarh	Attabira, Barpali, Sohela, Bhukta and Bheden
Tikabali	Tikabali	Ghumusur Udayagiri, and Raikia
Kendupatna	Kendupatna	Marshaghai, Danpur, Chhatia, Dhanamandal, Tarpur, Raghu-nathpur, Nischintakoili, and Salepur
Kantabanji	Kantabanji	Titilagarh
Sakhigopal	Sakhigopal	Satasankha
Paralakhemundi	Paralakhemundi	Uppalada, and Dasinagar
Balangir	Balangir	Tusra

Figures in brackets relate to 1983-84.

A "Market Committee" consisting of 15 members is constituted for each regulated market to manage the market. The Market Committee is to license the functionaries such as the commission agents, brokers, traders, retailers, the processing units, etc. Functioning through such licenced functionaries, the Market Committee enforces discipline in the matter of weighment, charges, prompt and full payment to the sellers, collection of market fees and the like. The principal sources of revenue of the Market Committee are (i) the licence fees and (ii) the market fees. In accordance with the provision of the Orissa Agricultural Produce Markets Rules, market fees to be levied on agricultural produces other than cattle, sheep and goat shall not exceed Rs. 1.25 per hundred rupees *ad valorem* and for cattle, sheep and goat shall not exceed Rs. 3.00 per hundred rupees *ad valorem*. The actual rate of fees is generally decided by the Market Committee. Market fees presently levied by Market Committees vary from 0.25 per cent to 1 per cent *ad valorem* on agricultural produce other than cattle, sheep and goat. On cattle, sheep and goat, fees levied vary from 2 per cent to 3 per cent.

Performance of regulated markets in the state is far from satisfactory. This is partly explained by the defective provisions of the O. A. P. M. Act. The Act and rules do not prohibit sale and purchase of agricultural produce in places other than the market. Parallel yard markets are run by local bodies and persons and as such the Market Committees find it difficult to regulate the trade in the area. Further, most of the Regulated Markets are not in possession of minimum landholding of 15 acres as prescribed by Government of India for sanction of central assistance. It has not also been possible to implement market development schemes and to utilise central assistance for this purpose because of inadequate staff in the field and headquarters to exclusively look after the problems of agricultural marketing. In this connection, it may be mentioned that an amount of Rs. 44.50 lakhs was received as central assistance for development of ten regulated markets and twenty-four primary markets by the end of 1978-79. While the entire amount of Rs. 24 lakhs meant for primary markets remained unutilised, only an amount of Rs. 5.25 lakhs out of Rs. 20.50 lakhs meant for Regulated Markets could be utilised by the end of 1978-79.

Centres of Wholesale business and Mandies; important Retail Marketing Centres; Fairs and Melas

The markets in Orissa may be divided into Primary Markets, Secondary Markets and Terminal Markets. Primary Markets as *hats* are weekly or bi-weekly gathering of buyers and sellers in a convenient place among a cluster of villages. According to the Bureau

of Statistics and Economics, Orissa, there are about 1400 primary markets in Orissa. In a sense, *hats* are important retail marketing centres for the villagers. Seasonal vegetables, wares of village artisans and other agricultural commodities are generally sold on retail basis. Some businessmen collect various local produce in bulk for onward transmission to towns and cities. Secondary markets known as "Bazars" are held daily at fixed market place usually situated at district/subdivisional headquarters or near the railway stations. Although retail sale constitutes an important part of secondary markets, they are primarily centres of wholesale business. The terminal markets are centres where produce is assembled in large quantities for diversion to other places inside the state and sometimes to places outside the state.

In Orissa, there are 79 wholesale marketing centres as listed by the Food and Civil Supplies Department of the State Government. The local produce is assembled in such centres for diversion to other places. Commodities produced locally are procured on wholesale basis from their production centres and are distributed through retailers in the area. A list of such wholesale centres district-wise is given in Appendix V. The centres are situated in more populous towns/cities, and, therefore, are also important retail centres.

Fairs and Melas are ancient institutions to serve as 'places of exchange.' People from far and near gather in holy places on religious and festive occasions. Some Melas continue for a period of one month and even more. Producers of the locality and merchants from distant places use such 'Melas' as convenient place to popularise and to sell their wares. Such fairs and *melas* are widespread in the state and they are held at different places on various religious occasions.

Co-operation in Wholesale and Retail Trade

Co-operative institutions have entered the wholesale and retail trade in a big way to ensure supply of essential commodities at reasonable prices to the consumers. The pattern of consumer co-operative is a three-tier structure with Orissa State Wholesale Consumers' Co-operative Federation Ltd., working at the apex level, Wholesale Consumers' Co-operative Stores at the intermediate level and Primary Consumers' Co-operatives at the base level. In view of continuous rise in prices, both the state and the Central Governments have been taking all possible steps to strengthen and consolidate consumers' co-operatives in the state.

In 1977-78, 28(38) wholesale consumers' co-operatives worked in the state with combined working capital of Rs. 273(843) lakhs. They purchased goods valued at Rs. 719(1370) lakhs and made a profit of Rs. 5(6) lakhs during 1977-78. During the same year 644(672) Primary Consumers' Co-operatives functioned in the state with a working capital of Rs. 250(373) lakhs. They together purchased goods valued at Rs. 493(792) lakhs and made a profit of Rs. 11 (14) lakhs.

State Trading: Fair Price Shops, etc.

There is no State Trading as such in Orissa except that the State Government in the Food and Civil Supplies Department procures rice which are supplied to fair price shops through storage agents. Fair price shops, however, constitute a significant element in the public distributing system of the state. On 1st July, 1979 the new Production-*cum*-Distribution Scheme was introduced in the state. Under the scheme there will be one fair price shop for every 2000 population in non-tribal areas and one fair price shop for every 1000 population in tribal areas. Accordingly, about 12,133 shops are to be opened in the state. There were 8,121 fair price shops working in the state during 1979-80 (18,679 in 1984) and their district-wise break-up is given in Table 12.

Of these, 2,925 (3,900) shops are co-operatives and the rest are privately owned. Fair price shops are to supply rice, wheat, coarse grains, edible oil, kerosene, sugar and control cloth. Additional items, such as, match boxes, exercise books, tea, coffee, washing and toilet soaps and cheaper varieties of cloth are also distributed, as and when they are made available by the procurement agencies of the Government of India. The State Wholesale Consumers' Co-operative Federation and the State Tribal Development Co-operative Corporation have been designed as the apex bodies for procurement, buffer-stocking and distribution of all these essential commodities.

Of the essential commodities, rice procured by the State Government and supplemented by the Food Corporation of India is supplied to fair price shops by the Collectors through Storage Agents. Wheat is supplied by the Food Corporation of India. The Collectors appoint Storage Agents for wheat in different C.D. Blocks and such agents supply wheat to fair price shops. Kerosene is supplied to wholesalers by the nationalised oil companies. The wholesalers in turn supply kerosene to fair price shops at rates approved by the Collectors. Prices of rice, wheat and kerosene are all fixed by the Government. Controlled cloth is made available through NCCF (National Consumer Co-operative Federation) and is distributed by the

* Figures in brackets relate to year 1983-84

State Wholesale Consumers' Federation through its co-operative units. There is no such line-up in regard to the supply of other essential commodities. Those other goods are procured in the open market and sold by the fair price shops.

TABLE 12

District-wise break-up of Fair Price shops

District	No. opened including co-operatives*
Cuttack ..	1,498 (3837)
Puri ..	559 (1891)
Mayurbhanj ..	727 (1322)
Baleshwar ..	831 (1645)
Balangir ..	339 (787)
Dhenkanal ..	628 (1644)
Kendujhar ..	499 (1159)
Sundargarh ..	593 (808)
Sambalpur ..	651 (1623)
Ganjam ..	693 (1361)
Koraput ..	556 (1208)
Kalahandi ..	281 (807)
Phulabani ..	264 (687)

Source : Food and Civil Supplies Department, Government of Orissa.

Chamber of Commerce and Merchant Associations

The aims and objects of the Merchant Associations and Chamber of Commerce are to promote and protect the trade, commerce and manufactures ; to watch over and protect the general commercial interests of persons engaged in trade, commerce or manufactures ; to encourage a friendly feeling and unanimity among commercial men ; to collect, classify and circulate statistics and other information relating to commercial interests, etc.

*Figures within brackets relate to the position as on 31-12-1984

In the state there are 36 such organisations, a district-wise list of which is given below.

District	List of Chamber of Commerce and Merchant's Association in Orissa.
Cuttack	1. Utkal Chamber of Commerce and Industry
	2. Cuttack Chamber of Commerce
	3. Cuttack Manohari Association
	4. Orissa Jewellers' Association
	5. Cuttack Timber Merchants' Association
	6. Utkal Pharmaceutical Distributors Association
	7. Orissa Young Entrepreneurs Association, Cuttack
	8. Maa Sarala Traders' Association, Jagatsinghapur
	9. Jajpur Road Merchants' Association
	10. Cuttack Cycle Trading Association
	11. Orissa Paper Dealers' Association
	12. Orissa Sports Association, Cuttack
Ganjam	1. Ganjam Chamber of Commerce
	2. Rambha Chamber of Commerce and Industry
	3. Asika Merchants' Association
	4. Chhatrapur Merchants' Association
	5. Kabisuryanagar Banik Sangha
	6. Seragada Banik Sangha

District**List of Chamber of Commerce and Merchants' Association in Orissa****Puri**

1. Puri Chamber of Commerce and Industry
2. Bhubaneshwar Byabasayi Sangha
3. Banpur Chamber of Commerce
4. Jatni Chamber of Commerce and Industry

Sambalpur

1. Sambalpur District Chamber of Commerce and Industry
2. Baragarh Merchants' Association
3. Jharsuguda Retail Dealers' Association

Balangir

1. Balangir District Merchants' Association

Kalahandi

1. Bhawanipatna Merchants' Association
2. Kesinga Merchants' Association

Koraput

1. Jaypur Chamber of Commerce

Kendujhar

1. Kendujhar Merchants' Association

Baleshwar

1. Baleshwar Byabasayi Sangha
2. Bhadrak Grocery Retailers' Association
3. Bhadrak Chamber of Commerce

Dhenkanal

Not available

Mayurbhanj

1. Rairangpur Merchants' Association
2. Baripada Byabasayi Sangha

Sundargarh

1. Rourkela Chamber of Commerce and Industry

Phulabani

Not available

Co-operative Movement

The Co-operative Societies Act, 1904 passed by the Imperial Legislative Council laid the foundation of the co-operative movement in India. The Act provided for the formation and establishment of urban and rural co-operative credit societies. The place of formation of societies in Orissa under the Act, was rather disappointing. By 1912, Orissa had only 82 small-sized societies with a membership of 3,182 and working capital of Rs. 2.78 lakhs. In 1912, the Co-operative Societies Act, 1904 was amended to provide for non-credit co-operative societies. Under the Government of India Act, 1919 co-operation became a provincial subject and was transferred to the control of ministers. The movement in Orissa, however, did not make much headway in spite of such changes. In 1936, when Orissa became a separate province there were altogether 2,154 co-operative societies with a membership of 74,000 and working capital of Rs. 98 lakhs in the province. In the new province the co-operative movement gathered momentum particularly during the post-Second World War period and by 1950-51 Orissa had 5,145 societies with a membership of 2.95 lakhs and working capital of Rs. 4.28 crores. The First Five-Year Plan and all subsequent Plans emphasised the role of co-operative organisations in almost every field of development, especially in the rural economy. The pace of the movement was accordingly accelerated in Orissa and on June 30, 1978, Orissa had 5,793 (6,021) societies (excluding weavers' and other industrial co-operatives) with a membership of 30.64 lakhs (35.68) and working capital of Rs. 374.13 (790.11) crores.

The co-operative movement in the country as well as in Orissa was inaugurated as a credit movement. Although non-credit activities were later added to the co-operative structure, credit continued to constitute the most significant element of the co-operative movement. Of the societies existing in Orissa on the 30th June, 1978, credit societies constituted 60 per cent of the total, covering 76 per cent of total membership of all societies. The structure of credit side has been referred to under the Section "Co-operative Societies and Banks."

Under the non-credit side, there are Marketing Co-operatives, Co-operative Sugar Factories, Co-operative Milk Union and Milk Supply Societies, Irrigation Co-operatives, Fishery Co-operatives, Housing Co-operatives, Labour Contract Co-operatives and Weavers' and other Industrial Co-operatives.

Figures in brackets relate to 1981-82

The following table shows the progress of Co-operative movement in Orissa.

TABLE 13

The Progress of Co-operative Movement in the State

Years		No. of Societies	Membership (in lakhs)	Working capital (Rs. in crores)
1950-51	..	5,145	2.95	4.28
1955-56	..	8,623	6.46	10.07
1960-61	..	11,206	12.33	25.66
1965-66	..	9,286	16.92	63.46
1968-69	..	8,117	19.12	87.23
1973-74	..	7,001	24.07	194.71
1975-76	..	7,193	29.16	293.95
1977-78	..	5,793	30.64	374.13

Source : Co-operative Movement in Orissa, Profile-1977-78

Marketing Societies

Marketing Societies in Orissa play a major role in the supply of agricultural inputs, such as, chemicals, fertilisers, pesticides and seed and in the procurement of surplus agricultural products from the agriculturists. Marketing societies may be divided into general purpose marketing co-operatives and specialised commodity marketing co-operatives. The general purpose marketing works in a three-tier system. Orissa State Co-operative Marketing Federation (O.S.C.M.F.) is the apex organisation, Regional Co-operative Marketing Societies (R.C.M.S.) are at the intermediate level and Primary Agricultural Co-operatives (P.A.Cs.) function at the grass-root level. Among the specialised commodity marketing co-operatives, Forest Marketing is most important and it functions through a two-tier system. Orissa State Tribal Development Co-operative Corporation is the apex organisation which, for the most part, operates through LAMPS (Large-sized Agricultural Multipurpose Co-operative Societies) and Tribal Development Co-operative Corporation and its constituents (LAMPS) function mostly in tribal areas and are engaged in

procuring and marketing of agricultural and minor forest products in addition to supplying essential consumer articles. During 1977-78, there were 59 (64 in 1983-84) R. C. M. S. with a working capital of Rs. 30.07 (43.9 in 1983-84) crores. They supply chemical fertilisers and other inputs through P. A. Cs. on the cash and carry system. Under the cash and carry system the P. A. Cs. purchase the articles from the R. C. M. S. with the cash credit accommodation provided by the Central Co-operative Banks. The value of the sale proceeds is adjusted towards the cash credit accounts of the P. A. Cs. with Central Co-operative Banks.

Other Specialised Commodity Marketing Co-operatives

(i) Jute: Jute is an important cash crop of the state. An exclusive Jute Marketing Society functions at Danpur in Cuttack district. It supplies jute to the Konarak Jute Mills set up by the Industrial Development Corporation, Orissa, and N. A. F. E. D.

(ii) Coconut : A coconut marketing society is functioning at Sakhigopal in Puri district. The society collects coconuts from the growers and markets the same in and outside the state. It has also taken up processing activities.

(iii) Cashew-nut: Two (Three) Cashew Processing Societies functioned in Orissa during 1977-78 with a membership of 565 and working capital of Rs. 7 (18) lakhs.

(iv) Fruits and Vegetables: Seven societies were dealing in fruits and vegetables during 1977-78 (33) with a membership of 267 and working capital of Rs. 15 (36) lakhs.

Co-operative Storage Project

To overcome the deficiency of storage facilities for marketing societies a co-operative storage project with World Bank assistance was taken up in the state. The project is to be implemented over a period of six years, 1978-79 being the first year of the project. This project envisages creation of 214,000 tonnes of new capacity and rehabilitation of 1,100 existing at the primary level with a capacity of 80,000 tonnes. The distribution of capacity at various levels is as under:

OSCMF	20,000 tonnes	23 godowns
TOCC	10,000 tonnes	6 godowns
RCMS	80,000 tonnes	280 godowns
PAC s	.. 104,000 tonnes	1,040 godowns
Rehabilitation	.. 80,000 tonnes	1,100 godowns
Total	.. 294,000 tonnes	2,449 godowns

Figures in brackets relate to 1983-84.

Co-operative Sugar Factories

Two Co-operative Sugar Factories, namely, the Asika Co-operative Sugar Industries Ltd., and the Baragarh Sugar Mills Ltd., functioned in the state during 1977-78. The two factories together had a membership of 21,000 and working capital of Rs. 771 lakhs in 1977-78. They crushed 2,53,000 tonnes of sugar-cane and the value of sugar sold was Rs. 260 lakhs. These two factories have been organised on a large scale to assist the sugar-cane growers of their respective localities. By 1983-84, there were four co-operative sugar factories with a working capital of 11.96 crores.

Co-operative Milk Union and Milk Supply Societies

In 1977-78 there were 5 Milk Unions and 193 (461) Primary Milk Supply Societies. These co-operatives are organised to provide subsidiary occupation to the unemployed and under-employed rural mass and to supply milk and milk products at a fair price to the urban people. These societies are patronised by Government through their specialised agencies like S. F. D. A., M. F. A. L., T. D. A. and I. T. D. P. Better varieties of cows and buffaloes are supplied to the members through their societies and the societies in turn collect milk from the members and adjust the sale proceeds towards their loan accounts.

Irrigation Co-operatives

Irrigation co-operatives provide minor and lift irrigation facilities to the agriculturists in the areas where flow irrigation is not available. In 1977-78 there were 100 (134) such co-operatives with a membership of 5,000 and working capital of Rs. 18 (39) lakhs.

Fishery Co-operatives

Fishery Co-operatives function mostly around Chilika lake. There were 210 (347) Primary Fishery Co-operatives with a membership of 26,000 and working capital of Rs. 102 (516) lakhs in 1977-78. An apex society, namely, the Central Fishermen Marketing Co-operative Society has also been functioning to provide marketing facilities to the primary societies.

Housing Co-operatives

The Housing Co-operatives arrange residential plots and funds for the construction of houses of their members. Some such co-operatives also sell readymade houses to the members. The Orissa

State Co-operative Housing Corporation is the apex institution which had 450 Primary Housing Co-operatives with a membership of 24,000 and working capital of Rs. 172 lakhs during 1977-78.

Labour Contract Co-operatives

Labour Contract Co-operatives are meant to unite the labour force in rural areas to ensure supply of organised and continuous working force in projects and other civil works. In recent years, most of them have become dormant.

Weavers' and Other Industrial Co-operatives

Co-operatives have been organised to protect handlooms and handicrafts of Orissa. For Weavers' Co-operatives, there are three apex Co-operatives, namely, the Orissa State Handloom Weavers' Co-operative Society, the Orissa State Powerloom Servicing Co-operative Society and the State Tassar Co-operative Society. For other Industrial Co-operatives, there are two apex institutions, namely, the Orissa Co-operative Handicrafts Corporation and Orissa Rajya Talgur Samabaya Sangha. These Apex Co-operatives provide financial and technical assistance and marketing facilities to the Primary Societies. Besides, there are two Co-operative Spinning Mills, one at Baragarh in Sambalpur district and the other at Dhenkanal.

Farming Co-operatives

Farming Co-operatives are organised for better farming and increasing production. In such societies, members pool their lands voluntarily, cultivate jointly and share the yields in proportion to the extent of land pooled by each of them. In 1977-78 there were 50 Farming Co-operatives with a membership 2,000 and working capital of Rs. 19 lakhs.

Consumers' Co-operatives

These co-operatives have been dealt in an earlier section of this chapter.

Weights and Measures

Prior to the enforcement of the metric system the weight in common use was the seer of 105 tolas as well as the seer of 80 tolas, which were used by all classes of traders dealing in

indigenous goods. For weighing vegetables, fish, brass utensils and various other products, the unit was the *bisa, pala, pahi mana, phuli*, etc. The common measure of volume was the *gauni, ada, boda, sola, gidha, mana, kudi, khandi, kat, pahi, puti, pastama, purug, tambli, katha, bharana, korua* and *paila* in all transactions of rice, paddy and other foodgrains. For measuring country-made cloth the unit of length was *hatha* or cubit, while for mill-made cloths the standard yard of 36 inches was used. The local land-measure used to be the *man, biswa, bharana, gunth, bati, suka, khuri, puti, paran* and *putty*. In the gradation of counting *ganda, pana* and *kahana* were used. There were also separate measures for liquids. In urban areas liquids were weighed according to the standard seer. *Bhari* (tola), *rati* and *masa* were the weights for gold and silver. The term *kos* was used for expressing long distances and *chakhand* for short distances. Besides, two series of units namely, maund, seer, chhatak and tola; and ton, grain, pound and ounce were generally recognised. For measuring lengths the recognised units were mile, furlong, yard, foot and inch.

These units of weights and measures varied not only in nomenclature but also in capacities from area to area. Materials from which these measures were constructed also varied from place to place. In some parts brass measures were in use and in others measures prepared from cane, bamboo, wood and earth. As a result of such differences in the use of weights and measures there was ample scope for the traders to cheat the consumers. Difficulties were also experienced by the traders in inter-state transactions as these weights varied from state to state and from district to district.

With a view to overcoming these difficulties which vitally concerned the traders and consumers, metric system of weights and measures was introduced from the 1st April, 1962 as an all India standard. This system has gained much popularity as it simplified accounting. The consumers are also benefited by this system as these weights are thoroughly verified and checked by the Inspector of Weights and Measures before they are sent to the market. Besides, regular checking is also done by the Inspectors. At the initial stage difficulties were experienced by the traders as well as consumers about the use of this new system. Consequently, regular propaganda was conducted through the field staff of marketing department and publicity department by way of distribution of conversion tables, charts, pamphlets, etc. The system is well received by the people.

APPENDIX I

Export of selected commodities moving by rail and inland steamer from Orissa

Period	Live-stock In Nos.				Bones (in tonnes)
	Cattles (Excludes sheep and goats)	Horses	Sheep & Goats	Others	
(1)	(2)	(3)	(4)	(5)	(6)
1967-68	.. 10,853	..	2,428	192	770
1968-69	.. 12,123	..	922	333	764
1969-70	.. 12,120	..	1,869	210	796
1970-71	.. 8,605	..	1,314	176	743
1971-72	.. 11,749	..	1,461	501	1,559
1972-73	.. 15,939	220	1,878	445	1,401
1973-74	.. 8,459	15	2,355	907	1,291
1974-75	.. 9,557	98	1,550	755	2,245
1975-76	.. 23,021	..	2,628	962	744
1976-77	.. 1,682	..	457	446	1,843

Period	Cement (in tonnes)	Coal and coke (in tonnes)	Coffee (in tonnes)	Cotton twist and yarn	
				Foreign (in tonnes)	Indian (in tonnes)
(1)	(7)	(8)	(9)	(10)	(11)
1967-68	.. 2,91,295	5,69,522	11	..	997
1968-69	.. 4,73,702	1,97,657	..	..	522
1969-70	.. 4,92,676	2,46,587	..	9	291
1970-71	.. 4,61,725	2,39,096	14	47	153
1971-72	.. 4,98,761	3,76,732	..	315	994
1972-73	.. 4,99,495	3,01,132	15	43	952
1973-74	.. 4,03,005	4,64,745	19	..	105
1974-75	.. 3,49,696	5,40,136	..	..	185
1975-76	.. 5,05,788	6,36,682	22	2	36
1976-77	.. 4,38,540	6,62,410	..	..	673

Period	Cotton piece goods		Fruits dried (tonnes)	Foodgrains, pulses and flours (tonnes)	
	Foreign	Indian		Gram and gram products	Pulses other than gram and gram products
(1)	(12)	(13)	(14)	(15)	(16)
1967-68 ..	12	1,116	2	24,748	3,717
1968-69 ..	20	888	396	20,319	2,767
1969-70 ..	21	631	1,119	31,441	3,013
1970-71 ..	15	538	1,942	33,872	2,871
1971-72 ..	10	754	1,659	22,705	4,069
1972-73 ..	1	222	2,651	34,167	3,947
1973-74 ..	15	69	698	29,352	3,042
1974-75 ..	11	280	851	29,366	2,977
1975-76 ..	1	186	603	27,672	1,938
1976-77 ..	..	26	218	29,959	1,826

Period	Foodgrains, Pulses and Flours (tonnes)					
	Maize	Jawar	Bajra	Millets other than Jawar and Bajra	Rice in the husk	Rice (not in the husk)
(1)	(17)	(18)	(19)	(20)	(21)	(22)
1967-68 ..	6,238	3,424	187	63	326	1,04,510
1968-69 ..	1,529	1,431	159	4	1,274	1,20,124
1969-70 ..	2,170	1,601	125	22	115	2,09,711
1970-71 ..	1,510	1,725	40	..	..	1,95,365
1971-72 ..	5,021	2,103	51	23	48	1,21,784
1972-73 ..	3,451	5,633	69	133	16	6,066
1973-74 ..	5,924	9,422	116	..	187	92,202
1974-75 ..	7,167	6,530	190	240	103	6,958
1975-76 ..	13,962	37,680	24	5	173	3,548
1976-77 ..	7,450	3,857	44	16	300	61,684

Period	(tonnes)			Dyes and Tans (myro- balans) (tonnes)	Glass	Hemp, Indian and other fibres excluding cotton and jute (tonnes)	Hides (Raw) (tonnes)
	Wheat	Wheat flour	Other				
(1)	(23)	(24)	(25)	(26)	(27)	(28)	(29)
1967-68	..	55	15,177	95	3,798	317	2,757
1968-69	482	892	10,135	722	2,558	639	3,105
1969-70	220	707	7,407	367	3,799	51	2,403
1970-71	249	11,875	3,868	1,629	4,370	901	2,992
1971-72	489	19,034	7,583	3,340	4,238	585	3,407
1972-73	774	7,334	6,416	2,317	3,576	368	3,368
1973-74	1,561	68	9,414	..	5,070	1,026	2,670
1974-75	802	10	9,231	..	6,515	650	3,034
1975-76	55	31	3,690	..	3,298	699	3,021
1976-77	8,585	3,856	4,032	..	1,798	373	2,856

Period	Hides and skins			Jute Raw Pucca Bales	Gunny bags and clothes (Bales)	Iron and steel bar (tonnes)	Lac (tonnes)
	Skin (Raw) (tonnes)	tanned and leather (tonnes)	Jute (Raw) loose (tonnes)				
(1)	(30)	(31)	(32)	(33)	(34)	(35)	(36)
1967-68	193	4	83	28,932	898	7,27,197	18
1968-69	180	48	185	23,354	1,543	10,08,051	228
1969-70	62	10	272	20,589	1,783	10,23,651	60
1970-71	77	26	45	19,425	3,501	8,98,570	76
1971-72	19	22	124	38,628	1,811	8,73,018	84
1972-73	9	19	141	13,881	1,533	10,70,806	69
1973-74	5	20	641	19,791	2,137	9,48,671	24
1974-75	10	1	947	18,719	1,702	9,36,793	79
1975-76	2	6	199	14,060	3,238	12,60,860	57
1976-77	1	31	177	7,640	2,043	12,23,452	05

(in tonnes)

Period	Manganese ore	Salt	Oil		Vegetable oil		
			Kerosene	Castor	Cocoa-nut	Ground-nut	Others
(1)	(37)	(38)	(39)	(40)	(41)	(42)	(43)
1967-68	2,72,373	1	1	..	..	45	517
1968-69	22,12,893	120	255	1	..	23	3,268
1969-70	16,74,054	422	32	6	..	21	3,806
1970-71	4,89,789	..	101	3	..	32	2,183
1971-72	2,12,933	161	55	..	19	27	1,024
1972-73	2,42,475	609	1,751	1	..	29	1,317
1973-74	1,86,000	1,615	1	..	..	36	1,306
1974-75	2,38,962	2,840	..	15	..	20	2,261
1975-76	2,22,875	658	..	..	..	2	4,363
1976-77	2,01,275	73	4	..	..	15	5,796

(in tonnes)

Period	Oil Seeds					
	Castor	Cotton	Ground nut	Linseed	Rape and Mustard	Til or Jinjili
(1)	(44)	(45)	(46)	(47)	(48)	(49)
1967-68	85	..	983	885	838	2,356
1968-69	327	1	1,491	461	1,723	5,964
1969-70	1,137	67	568	705	2,670	3,344
1970-71	693	17	334	481	1,269	1,180
1971-72	258	28	343	897	2,590	1,658
1972-73	539	18	283	574	1,946	4,055
1973-74	269	6	654	1,219	2,725	5,310
1974-75	473	23	1,450	934	1,326	8,958
1975-76	393	20	566	3,265	4,709	8,839
1976-77	131	119	476	1,360	2,429	2,205

(in tonnes)

Period	Oil cakes		Ghee	Rubber (Raw)	Tea
	Castor	Others			
(1)	(50)	(51)	(52)	(53)	(54)
1967-68	..	6,484	4	..	..
1968-69	..	5,770	..	..	..
1969-70	..	7,408	..	..	17
1970-71	..	5,413	..	..	40
1971-72	..	6,407	1	1	41
1972-73	..	16,155	..	..	16
1973-74	..	19,537	19	92	..
1974-75	..	30,817	19	44	..
1975-76	..	21,519	2	..	1
1976-77	..	30,207	..	..	131

(in tonnes)

Period	Tobacco (Raw)	Sugar			Molasses
		Sugar (excluding khandsari sugar)	Khand- sari sugar	Gur Jaggery and Gur shakkar	
(1)	(55)	(56)	(57)	(58)	(59)
1967-68	..	16	..	27	83
1968-69	..	93	154	18	148
1969-70	..	72	416	232	756
1970-71	..	108	277	188	938
1971-72	..	77	630	64	843
1972-73	..	108	236	208	442
1973-74	—	178	283	80	251
1974-75	..	184	352	143	131
1975-76	..	73	435	147	204
1976-77	..	37	431	172	76

(in tonnes)

Period	Wood and Timber (Teak)	Bricks	Other Timber	Wool (Raw)	Lime and Limestone
(1)	(60)	(61)	(62)	(63)	(64)
1967-68	250	1,07,798	1,88,682	..	15,20,045
1968-69	603	90,379	1,61,217	..	11,85,924
1969-70	321	1,24,983	1,74,905	19	10,65,249
1970-71	539	1,44,996	1,43,630	..	10,34,963
1971-72	924	1,56,574	1,63,752	..	10,04,070
1972-73	2,871	1,53,833	1,73,132	22	10,03,569
1973-74	333	1,38,176	1,40,050	84	8,82,014
1974-75	650	1,60,318	1,49,078	29	10,82,265
1975-76	203	1,78,671	1,68,671	10	90,63,651
1976-77	75	2,20,667	2,20,667	..	14,34,360

(in tonnes)

Period	Tiles	Raw Cotton		
		India lint	Foreign lint	Kapas
(1)	(65)	(66)	(67)	(68)
1967-68	..	36	43	..
1968-69	..	226	81	25
1969-70	..	26	16	1
1970-71	..	48	18	..
1971-72	..	245	49	..
1972-73	..	410	20	17
1973-74	..	245	115	34
1974-75	..	40	81	29
1975-76	..	141	719	41
1976-77	..	238	1,411	22

Source: Statistical Abstract of Orissa, 1977, Bureau of Statistics and Economics, Orissa

APPENDIX II

Imports of selected commodities moving by rail and inland steamer into Orissa

Period	Live-stock (Nos.)				Bones (in tonnes)	Cement (in tonnes)
	Cattle (excluding sheep and goat	Horse	sheep and goat	Others		
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1967-68 ..	1,768	1	350	840	47	1,71,517
1968-69 ..	3,050	..	262	870	213	1,03,474
1969-70 ..	2,928	..	222	700	192	1,31,863
1970-71 ..	4,842	..	2,102	785	220	1,08,932
1971-72 ..	2,046	..	5,195	1,732	36	1,19,698
1972-73 ..	2,330	..	5,691	1,102	300	76,810
1973-74 ..	1,721	..	1,200	196	32	57,832
1974-75 ..	1,517	..	2,535	168	4	39,323
1975-76 ..	1,671	..	62,971	619	..	62,971
1976-77 ..	1,586	..	471	269	416	48,318

(in tonnes)						
Period	Coal and coke	Coffee	Cotton twist and yarn		Cotton piece goods	
			Foreign	Indian	Foreign	Indian
(1)	(8)	(9)	(10)	(11)	(12)	(13)
1967-68 ..	2,392,580	17	85	2,091	1	6,739
1968-69 ..	7,461,145	9	17	1,144	..	1,543
1969-70 ..	2,341,035	7	2	913	..	994
1970-71 ..	2,512,089	11	2	689	1	815
1971-72 ..	2,335,274	34	22	494	108	652
1972-73 ..	2,646,297	13	5	485	..	447
1973-74 ..	2,687,190	10	1	122	..	298
1974-75 ..	2,769,868	28	13	102	1	651
1975-76 ..	2,950,042	56	1	140	..	190
1976-77 ..	2,800,486	1	4	150	34	246

(in tonnes)

Period	Fruits dried	foodgrains		Pulses and flour		
		Gram & Gram Products	Pulses other than Gram & Gram Products	Maize	Jawar	Bajra
(1)	(14)	(15)	(16)	(17)	(18)	(19)
1967-68 ..	803	7,771	37,950	1,421	155	16
1968-69 ..	642	21,779	42,752	767	81	13
1969-70 ..	333	10,375	39,709	150	12	29
1970-71 ..	589	14,517	49,870	172	78	136
1971-72 ..	582	17,953	51,538	175	86	75
1972-73 ..	435	13,945	41,176	5,122	105	62
1973-74 ..	750	11,137	36,306	96	42	34
1974-75 ..	263	9,967	27,878	390	390	99
1975-76 ..	457	11,459	36,397	74	58	69
1976-77 ..	63	29,800	50,394	1,717	137	55

(in tonnes)

Period	Millets other than Jawar & Bajra	Rice in the husk	Rice not in the husk	Wheat	Wheat flour	Other sorts	Dyes and tans (Myro- balans)
(1)	(20)	(21)	(22)	(23)	(24)	(25)	(26)
1967-68	298	165	2,281	106,201	23	8,333	259
1968-69 ..		200	3,449	174,611	3,030	5,830	154
1969-70	24	268	4,352	91,358	2,054	4,738	101
1970-71	6	134	16,231	112,118	11,059	3,577	24
1971-72	20	885	29,537	205,084	14,818	4,207	..
1972-73	27	531	89,855	259,442	9221	3,013	..
1973-74	27	162	2,182	168,036	5	2,110	..
1974-75 ..		4,339	13,911	234,822	384	4,644	..
1975-76	16	13,823	43,373	300,780	368	3,569	..
1976-77	11	9,880	5,038	99,628	811	10,777	..

(in tonnes)

Period	Glass	Hemp (Indian & Other fibres excluding cotton and jute)	Hides (Raw)	Skin (Raw)	Hides & skins tanned & leather	Jute (Raw) loose	Jute (Raw) pucca & in bales
(1)	(27)	(28)	(29)	(30)	(31)	(32)	(33)
1967-68	..	2,346	3	74	2	48	230
1968-69	..	1,695	49	65	6	111	77
1969-70	..	1,699	59	139	8	58	31
1970-71	..	1,627	54	158	1	49	188
1971-72	..	1,479	492	86	1	67	183
1972-73	..	1,180	1,489	77	1	39	778
1973-74	..	1,140	640	41	..	75	150
1974-75	..	637	648	91	..	60	110
1975-76	..	704	20	27	74	25	714
1976-77	..	438	44	12	..	3	500

(in tonnes)

Period	Gunny bags & cloths	Iron & steel bar	Lac & shellac	Manganese Ore	Salt	Kerosene
(1)	(34)	(35)	(36)	(37)	(38)	(39)
1967-68	10,712	1,38,012	6	33,920	1,18,308	52,858
1968-69	9,150	92,150	15	1,95,265	1,24,444	48,052
1969-70	10,296	1,04,273	15	3,25,337	1,48,190	65,928
1970-71	12,310	1,20,286	44	99,562	34	66,285
1971-72	9,042	2,08,200	16	54,825	1,75,588	70,918
1972-73	11,093	2,06,49	42,233	78,910	1,39,681	69,815
1973-74	8,916	1,72,848	49	68,313	1,16,378	60,178
1974-75	6,558	1,92,774	1	69,252	1,35,149	53,812
1975-76	9,589	3,00,755	24	53,168	1,61,838	60,880
1976-77	8,930	5,15,095	88	27,810	2,72,214	55,356

(In tonnes)

Period (1)	Vegetable Oils				Oil-seeds			
	Castor (40)	Cocoanut (41)	Groundnut (42)	Others (43)	Castor (44)	Cotton (46)	Groundnut (46)	Linseed (47)
1987-88	848	2,449	6,160	17,204	..	155	370	25
1988-89	1,747	3,073	6,173	11,672	353	32	351	23
1969-70	1,495	2,401	2,935	12,248	6	47	190	87
1970-71	1,581	2,163	3,700	11,705	14	55	267	20
1971-72	1,748	2,614	6,683	11,550	43	683	192	56
1972-73	1,090	2,263	3,687	8,955	699	10	214	117
1973-74	1,309	2,013	1,422	4,748	37	83	111	99
1974-75	660	846	842	3,224	6	8	557	82
1975-78	312	1,023	1,034	5,607	101	22	1,952	24
1976-77	179	1,612	2,027	9,415	6	11	2,175	628

(in tonnes)

Period (1)	Oil cakes				Ghee (52)	Rubber (Raw) (53)
	Rape and Mustard (48)	Til or Jinjili (49)	Castor (50)	Others (51)		
1967-68	2,920	298	467	4,681	332	21
1968-69	2,847	44	34	5,737	40	15
1969-70	2,653	62	94	5,027	42	..
1970-71	3,660	297	47	4,767	54	..
1971-72	4,847	196	10	5,200	79	..
1972-73	4,734	94	21	4,435	26	..
1973-74	3,841	116	90	17	56	..
1974-76	5,965	19	..	5,037	111	..
1975-76	8,629	290	24	7,020	13	..
1976-77	6,595	509	49	5,291	26	6

(in tonnes)

Period	Tea	Tobacco	Sugar			
			Sugar (Excluding Khandasari sugar)	Khandasari sugar	Gur Jaggery ann Gur Shakkar	Molasses
(1)	(54)	(55)	(56)	(57)	(58)	(59)
1967-68	518	2,652	34,275	413	5,186	5,541
1968-69	397	2,603	25,907	160	9,456	3,233
1969-70	419	3,549	34,898	311	8,771	3,491
1970-71	388	3,277	41,108	1,036	8,028	4,406
1971-72	426	2,429	48,796	626	9,256	5,347
1972-73	288	2,179	37,599	1,043	7,974	4,527
1973-74	99	2,261	51,915	906	10,398	6,153
1974-75	228	2,214	49,799	2,202	10,297	6,682
1975-76	4,267	1,527	69,206	1,936	12,603	13,824
1976-77	558	1,776	79,067	1,417	19,886	14,779

(in tonnes)

Period	Wood and Timber (tsak)	Bricks	Othsr Timber	Wool (Raw)	Lims and Limestone	Tiles
(1)	(60)	(61)	(62)	(63)	(64)	(65)
1967-68	.. 711	11,783	7,117	5	6,93,687	2,376
1968-69	.. 281	12,019	14,238	11	3,51,040	2,908
1969-70	.. 528	70,048	12,580	32	3,18,471	2,231
1970-71	.. 130	10,371	7,140	17	2,99,654	1,231
1971-72	.. 190	25,164	8,867	98	2,66,063	2,281
1972-73	.. 154	44,454	8,386	11	3,62,380	2,280
1973-74	.. 226	15,364	5,601	41	3,42,580	1,721
1974-75	.. 105	12,508	6,091	7	3,56,971	1,663
1975-76	.. 208	18,713	6,021	34	3,88,623	1,190
1976-77	.. 144	31,589	3,888	..	2,92,834	678


(in tonnes)

Period	Raw cotton		Kapas
	Indian lint	Foreign lint	
(1)	(66)	(67)	(68)
1967-68	12,337	182	378
1968-69	9,647	132	1,375
1969-70	7,933	111	2,602
1970-71	4,171	41	3,056
1971-72	5,869	32	1,995
1972-73	11,270	72	1,018
1973-74	9,355	40	1,366
1974-76	8,580	7	1,701
1975-76	9,970	19	1,588
1976-77	8,279	6	1,000

Source: Statistical Abstract of Orissa, 1977, Bureau of Statistics and Economics

APPENDIX III
Exports of Orissa

Sl. No.	Goods Exported	1974-75		1975-76
		The country to which goods are exported	value (Rs. in lakhs)	
(1)	(2)	(3)	(4)	(5)
1. Metallurgical Products				
1	Pig Iron	Yugoslavia, Bangladesh	173.10	Yugoslavia
2	Low and High carbon, Ferro-chrome.	Netherland	140.89	Korea
3	Ferro-silicon	U. S. A.	33.39	Nil
4	Ferro-manganese	Iran, Philippines	1.22	
II. Engineering Chemical and Allied Products.				
(A) Large scale Industries				
1	G. C. Sheet G. P. Sheet C. R. Coils Tin plate	Nepal, Bhutan	197.70	Bangladesh
2	Galvanised Blocks-MS Pipe Tubes	Saudi Arabia, East Africa, Libya, U. K., Kuwait, Abudhabi	126.27	Kuwait, Bangladesh, Abudabi, East Africa
3	Portland Cement	Bhutan, Sikkim, Nepal	11.67	Bhutan, Sikkim, Nepal
4	Writing, Printing, Packing papers, etc.	Malayasia, Iran	8.11	Nil
5	Air Mail Paper	Iran	8.01	..
6	Fire Bricks, Silica, Mortar, High Aluminium Raming Mass	Sri Lanka, Thailand, Bangladesh	5.31	Sri Lanka, Bangladesh, Yugoslavia

Sl. No.	Goods Exported	1976-77			Value (Rs. in lakhs)
		(1)	(2)	The country to which goods are exported	
(1)	(2)	(3)	(4)	(5)	(6)
1	Pig Iron	126.08		Rumania, Bangladesh	108.20
2	Low and High Carbon Ferro-chrome	89.90		Rumania, Holland, Philippines, North Korea.	273.26
3	Ferro-silicon	..		U. S. A., Japan	371.49
4	Ferro-manganese	..		Holland	44.39
					
(A) Large scale Industries					
	G. C. Sheet	361.11		Abudhabi, Iran, Kuwait, Philippines, Bangladesh, Egypt, Holland.	332.19
	G P. Sheet				
	C. R. Coils				
	Tin Plate				
2	Galvanised Block- MS Pipe Tubes	30.72		Agaba, Kuwait, Khoramshahar, Abudhabi, Dubai, Bangladesh, etc.	218.28
3	Portland Cement	7.78		Bhutan, Nepal	3.12
4	Writing, Printing, packing papers, etc.	..		..	..
5	Air Mail Paper	..		..	..
6	Fire Bricks, Silica, Mortar High Aluminium Raming Mass	2.47		Bangladesh	0.34

(1)	(2)	(3)	(4)	(5)
7	Refractory Bricks	Middle East and South East Asia, Bangladesh	41-80	Arab Republic of Egypt, Iran, Bangladesh, Thailand and U.K.
8	Fire Bricks, Mortars	Iran, Thailand	41-32	Iran and Indonesia
9	Sugar	Iran, Indonesia	11-18	Egypt, U. S. A.
10	Cotton Yarn Grey Finishing cloth	U.S.S.R., U.K., U.S.A., Iran, Sudan	109-48	U. S. A., U. K., U. S. S. R.
11	Phosphatic Fertiliser	Bhutan	0-30	..
12	Caustic Soda	..	..	..
(B)	Small scale Industries			
1	Iodo Form Powder	Sri Lanka	0-03	..
2	Power and Distribution Transformers	..	..	..
(C)	Minerals			
1	Chrome Ore (Tata)	Japan	87-47	
2	Manganese Iron-ore	Japan, Rumania, Poland, S. Korea, W. Europe, Czechoslovakia	36-71	Japan, Czechoslovakia, S. Korea, Japan
3	Chromite	..	..	..
4	Chrome Ore	..	..	..
5	Non-Cooking High Moisture, High Voltage Coal	..	..	..
(D)	Agricultural and Forest Products			
1	Genduffi Gum (Gumkaraya)	U. S. A.	748	
2	Kendu leaves, Timber	Sri Lanka, Japan	56-04	Sri Lanka, Pakistan, Japan
3	Sal-fat oil and Sal cake	..	..	Japan

1	2	6	7	8
7	Refractory Bricks	10.80	Iran, Bangladesh, Thailand, Malaysia	54.48
8	Fire Bricks, Mortars	94.32	Iran, Bangladesh, Tanzania, Kenya	43.86
9	Sugar	33.31	..	28.18
10	Cotton Yarn, Gray Finishing cloth	180.19	U. K, U.S.A., U. S. S. R.	284.70
11	Phosphatic Fertiliser	..	..	..
12	Caustic Soda	..	Bangladesh	0.92
(B) Small Scale Industries				
1	Indo Form Powder	..	..	..
2	Power and Distribution transformers	..	..	7.39
(C) Minerals				
1	Chrome ore (Tata)	..	..	..
2	Manganese Iron-Ore	121.69	Japan	13.87
		1327.67	Japan, Rumania	3236.44
3	Chromite	886.57	W. Europe, Poland, Japan	1392.28
4	Chrome Ore	..	Japan	51.70
5	Non-cooking High Moisture High voltage Coal	..	Italy, Denmark and West Germany	39.56

1	2	3	4
(D) Agriculture and Forest Product			
1	Genduli Gum (Gumkaraya) ..	..	..
2	Kendu leaves, timber ..	32.43	10.90
		Sri Lanka	
3	Sal-fat oil and Sal cake ..	11.65	47.74
		W. Germany	
(E) Marine Products			
1	Frozen Shrimp	Japan, U. S. A., France	251.76
2	Handloom fabrics, cotton, tassar and silk-fabrics	W. Germany, U. K., U. S. A., France, Italy, Hong Kong	37.45
(F) Handicrafts			
1	Applique canopy, applique umbrella, wooden home paper make mask, handicraft products.	Australia, U. S. A.	0.29
2	Silver utility article, House-hold decoratives	U. S. A., Japan	1.81
3	Silver Filigree	.. U. S. A., Cyprus, Italy, Surinam, France	1.52

1	2	5	6	7	8
(E) Marine Products					
1	Frozen Shrimp	..	Japan, U. S. A., U. K.	294.86	Japan, Switzerland, U.S.A., W. Germany ..
2	Handloom fabrics, cotton, tassar, and silk-fabrics	..	U. K., U. S. A., W. Germany, France, Italy, Singapore, Japan, etc.	39.33	U. S. A., W. Germany, Singapore, Mauritius, U. K., Japan, etc. ₹80.71
(F) Handicrafts					
1	Applique canopy, applique umbrella, Wooden painted, home paper make mask, handicraft products	..	Switzerland, W. Germany, France, U. S. A.	1.03	W. Germany, Italy, Australia, Hong Kong, France, U. K., U. S. A. 2.81
2	Silver utility article, Household decoratives	..	U. S. A.	0.10	0.16
3	Silver Filigree	..	Nicosia, Greece, Italy, U. S. A.	1.33	Greece, U. S. A., Italy, Singapore, Cyprus, U. K., U. S. A., Mauritius 0.76

Source :—Directorate of Export Promotion and Marketing. Government of Orissa

APPENDIX IV
Regulated Markets in Orissa

Name of district (1)	Name of regulated market (2)	Name of establishment (3)	Name of commodities regulated (4)
Puri	1. Sakhigopal ..	1961	Paddy, Rice, Cocoanut, Potato
	2. Jatni ..	1958	Sun hemp, Jute, Paddy, Rice, Wheat, Biri, Arhar, Mung, Kulthi, Bunt, Channa, Khesari, Jhudang, Groundnut, Sesamum, Mustard, Cocoanut, Tobacco, Gur, Sugar-cane, Mango, Banana, Potato, Onion, Tomato, Betel leaves, Ragi, Linseed, Cattle.
	3. Bahadajhola ..	1973	Paddy, Rice, Maize, Mung, Biri, Khesari, Channa, Groundnut, Gingelly, Gur, Mango, Jack fruit, Tamarind, Brinjal, Onion, Potato, Sweet potato, Tomato, Cattle, Sheep, Goat.
Cuttack	4. Nimapartha ..	1975	Paddy, Rice, Ragi, Mung, Biri, Kulthi, Ground-nut, Mustard, Cocoanut, Potato, Jute.
	5. Kendupatna ..	1959	Paddy, Rice, Ragi, Mung, Biri, Kulthi, Ground-nut, Mustard, Cocoanut, Potato, Jute.
	6. Jagatsinghapur ..	1966	Jute, Paddy, Rice, Maize, Ragi, Mung, Biri, Kulthi, Gram, Groundnut, Til, Mustard, Gur, Brinjal, Tomato, Onion, Potato, Cabbages, Betel leaves.

7. Jaipur	..	1967	Paddy, Mung, Biri, Arhar, Kulthi, Mustard, Coriander, Chilli.
8. Banki	..	1960	Jute, Sun hemp, Mesta, Paddy, Rice, Mung, Biri, Kulthi, Khesari, Chana, Mustard, Groundnut, Sesamum, Gur, Sugar-cane, Potato, Onion, Cabbage, Cauliflower, Tomato, Brinjal, Colocasia, Sweet potato, Pumpkin, Coriander, Garlic, Chilli, Tobacco, Mango.
9. Bhadrak	..	1959	Jute, Paddy, Rice, Mung, Biri, Khesari, Gur, Cattle, Sheep, Goat.
10. Baleshwar	..	1966	Paddy, Rice, Mung, Biri, Arhar, Khesari, Masur, Bunt, Groundnut, Coccoanut, Gur, Mango, Banana, Potato, Onion, Egg, Poultry, Cattle, Fish, Dry fish, Turmeric, Coriander, Chilli.
11. Jaleshwar	..	1964	Cotton (ginned and un-ginned), Sun hemp, Jute, Paddy, Rice, Biri, Mung, Mustard, Coccoanut, Groundnut, Tobacco, Gur, Sugar-cane, Mango, Orange, Lemon, Banana, Sapeta, Jack fruit, Tamarind, Potato, Onion, Tomato, Sweet potato, Poultry, Cattle, Sheep, Goat, Coriander Chilli, Fish, Dry fish, Turmeric, Ginger, Garlic, Betel leaves, Cashew-nuts, Bran, Sabai grass and its products.

(1)	(2)	(3)	(4)
	12. Chandbali	..	1961
	..	1967	..
Mayurbhanj	13. Baripada	..	1967
	..	1961	..
	14. Betanati	..	1965
Kendujhar	15. Anandapur	..	1965
	16. Kendujhar	..	1966
	..	1961	..
	..	1967	..
	..	1961	..
	..	1965	..
	..	1966	..

Paddy, Rice, Biri, Mung, Arhar, Jute, Mung Dal, Arhar Dal, Sun hemp, Khesari Dal, Bunt Dal, Gur, Potato, Onion.

Jute, Paddy, Mung, Biri, Kulthi, Poultry, Groundnut, Potato, Onion, Cattle, Poultry, Sabai Grass, Sabai rope.

Jute, Sun hemp, Paddy, Rice, Biri, Mung, Bunt, Gur, Potato, Onion, Sabai grass, Sabai rope.

Sun hemp, Jute, Paddy, Maize, Ragi, Suan, Arhar, Biri, Mung, Kulthi, Bunt, Chana, Khesari, Groundnut, Linseed, Niger, Mustard, Coconut, Tobacco, Gur, Sugar-cane, Orange, Mango, Lemon, Banana, Tamarind, Potato, Onion, Tomato, Colacasia, Sweet Potato, Egg, Poultry, Goat, Sheep, Fish, Turmeric, Chilli, Betel leaves.

Jute, Paddy, Maize, Ragi, Suan, Bajra, Arhar, Biri, Mung, Kulthi, Bunt, Chana, Khesari, Groundnut, Linseed, Niger, Castor, Potato, Mustard, Onion, Tomato, Colacasia, Leafy and fresh vegetables, Sweet Potato, Egg, Poultry, Cattle, Goat, Sheep, Mango, Tamarind, Turmeric, Ginger.

Sambalpur	..	17. Attabira	..	1972	..	Paddy, Rice, Wheat, Jawar, Bajra, Ragi, Biri, Mung, Bunt, Groundnut, Mustard, Gur, Sugar-cane, Banana, Potato, Egg, Poultry, Cattle, Sheep, Goat, Papaya.
		18. Sambalpur	..	1962	..	Sun hemp, Jute, Paddy, Rice, Wheat, Biri, Mung, Kulthi, Bunt, Khesari Chana, Groundnut, Mustard, Potato, Onion, Cattle, Sheep, Goat, Poultry.
		19. Jharsuguda	..	1967	..	Paddy, Biri, Mung, Groundnut, Potato, Onion, Tomato, Colocasia, Sweet Potato, Chilli.
		20. Baragarh	..	1958	..	Sun hemp, Paddy, Rice, Wheat, Biri, Mung, Kulthi, Bunt, Chana, Sesamum, Mustard, Groundnut, Cattle, Sheep, Goat, Gur and Sugar-cane.
		21. Padmapur	..	1965	..	Paddy, Rice, Mung, Biri, Sesamum, Groundnut, Poultry, Cattle, Sheep, Goat.
Balangir	..	22. Balangir	--	1965		Sun hemp, Paddy, Arhar, Kulthi, Khesari, Bunt, Sesamum, Gur, Sweet Potato, Cauliflower, Cabbage, Egg, Poultry, Cattle, Sheep, Goat, Turmeric, Chilli, Jute.

1	2	3	4
	23. Kantabanji	...	1959
			Sun hemp, Jute, Wheat, Paddy, Ragi, Suan, Arhar, Biri, Mung, Kulthi, Chana, Castor-seeds, Sesamum, Tobacco, Potato, Onion, Goat, Turmeric, Garlic, Coriander, Chilli.
	24. Dunggripali	..	1976
			Paddy, Rice, Wheat, Mung, Biri, Arhar, Bunt, Groundnut, Sugar-cane, Gur, Potato, Fresh Vegetables, Cattle, Sheep, Goat, Poultry.
Kalahandi	25. Junagarh	...	1960
			Sun hemp, Jute, Paddy, Ragi, Wheat, Arhar, Biri, Mung, Kulthi, Bunt, Khesari, Kandula, Chana, Groundnut, Linseed, Niger, Mustard, Castor, Tobacco, Gur, Onion, Poultry, Cattle, Sheep, Goat, Garlic, Coriander, Chilli, Jhudang.
	26. Kharial Road	..	1960
			Sun hemp, Jute, Wheat, Paddy, Ragi, Arhar, Biri, Mung, Kulthi, Bunt, Chana, Khesari, Groundnut, Linseed, Niger, Mustard, Castor-seed, Gur, Onion, Egg, Poultry, Cattle, Sheep, Goat, Garlic, Coriander, Chilli.
	27. Kesinga	..	1966
			Jute, Mesta, Paddy, wheat, Jowar, Bajra, Ragi, Maize, Biri, Mung, Kulthi, Red gram, Niger, Mustard, Linseed, Gingelly, Groundnut, Poultry, Coriander, Chilli.

Dhenkanal	..	28. Anugut	..	1959	Paddy, Rice, Maize, Nagi, Kului, Biri, Wung, Arhar, Chana, Khesari, Groundnut, Gingelly, Mustard, Castor seed, Gur, Sugar-cane, Mung, Orange, Lemon, Tamarind, Potato, Onion, Tomato, Cauliflower, Cabbage, Green Chilli, Poultry, Cattle, Sheep, Goat, Garlic, Coriander.
Phulabani	..	29. Tikabali	..	1958	Paddy, Jhudang, Kandula, Groundnut, Niger, Mustard, Poultry, Cattle, Sheep, Goat, Turmeric.
Ganjam		30. Paralakhemundi		1964	Jute, Paddy, Rice, Jawar, Ragi, Biri, Groundnut, Gur, Tamarind, Cattle, Sheep, Goat, Poultry, Turmeric.
		31. Hinjili		1969	Paddy, Rice, Potato, Onion, Brinjal, Tomato, Colocasia, Sweet Potato, Leafy and fresh Vegetables, Cattle, Dry fish.
Koraput		32. Koraput		1970	Paddy, Jawar, Ragi, Bajra, Suan, Maize, Arhar, Biri, Mung, Kulthi, Jhudang, Kandula, Mustard, Castor, Gingelly, Niger, Groundnut, Tobacco, Gur, Tamarind, Poultry, Cattle, Sheep, Goat, Turmeric, Chilli, Ginger, Garlic.

(1)	(2)	(3)	(4)
33. Jaypur	1964	Sun hemp, Jute, Wheat, Paddy, Jawar, Bajra, Maize, Ragi, Suan, Arhar, Biri, Mung, Kulthi, Bunt, Chana, Khesari, Jhudang, Kandula, Groundnut, Linseed, Sesamum, Niger, Tobacco, Tamarind, Potato, Onion, Tomato, Sweet Potato, Poultry, Cattle, Sheep, Goat, Turmeric, Ginger, Garlic, Corriander, Chilli.	
34. Nabarangapur	1960	Sun hemp, Jute, Wheat, Paddy, Jawar, Ragi, Arhar, Biri, Mung, Kulthi, Bunt, Kandula, Niger, Mustard, Castor, Tobacco, Gur, Onion, Poultry, Cattle, Sheep, Goat, Garlic, Corriander, Chilli.	
35. Gunupur	1961	Paddy, Jawar, Bajra, Ragi, Arhar, Biri, Mung, Kulthi, Jhudang, Kandula, Mustard, Castor seeds, Gingelly, Tamarind, Poultry, Cattle, Sheep, Goat, Turmeric.	
36. Rayagarha	1967	Paddy, Jawar, Bajra, Maize, Ragi, Kandula, Biri, Mung, Kulthi, Bunt, Chana, Groundnut, Niger, Mustard, Castor, Tobacco, Tamarind, Potato, Sweet Potato, Turmeric, Chilli, Sabai grass, Bran, Gur, Sugar-cane.	

In the meantime three more regulated markets, one at Kendraparha in Cuttack district, another at Champua in Kendujhar district, and a third at Malkangiri in Koraput district have been set up.

APPENDIX V**District-wise distribution of centres of wholesale business**

District		Name of the Centre
(1)		(2)
1. Baleshwar	..	1. Baleshwar 2. Bhadrak 3. Chandbali 4. Jaleshwar 5. Nilagiri 6. Soro
2. Balangir	..	1. Balangir 2. Kantabanji 3. Patnagarh 4. Sonapur 5. Titilagarh
3. Cuttack	..	1. Athagarh 2. Banki 3. Cuttack 4. Danpur 5. Dhanmandal 6. Jagatsinghapur 7. Jajpur 8. Jajpur Road 9. Kendraparha 10. Kendupatna 11. Marshaghai
4. Dhenkanal	...	1. Anugul 2. Athamallik 3. Dhenkanal 4. Hindol 5. Kamakhyanagar 6. Pala Lahara 7. Talcher
5. Ganjam	..	1. Asika 2. Brahmapur 3. Bhanjanagar 4. Chhatrapur 5. Paralakhemundi

(1)	..	(2)
6. Kalahandi	..	1. Bhawanipatna 2. Dharamgarh 3. Junagarh 4. Kharial Road 5. Kesinga 6. Nuaparha
7. Kendujhar	..	1. Anandapur 2. Barbil 3. Champua 4. Kendujhargarh
8. Koraput	..	1. Gunupur 2. Jaypur 3. Koraput 4. Malkangiri 5. Nabarangapur 6. Rayagarha
9. Mayurbhanj	..	1. Baripada 2. Betanati 3. Kaptipada (Udala) 4. Karanjia 5. Rairangpur
10. Phulabani	..	1. Baligurha 2. Boudh 3. Ghumusar Udayagiri 4. Tikabali 5. Phulabani
11. Puri	..	1. Bhubaneswar 2. Jatni 3. Khorda 4. Nayagarh 5. Nimaparha 6. Puri 7. Sakhigopal



(1)		(2)
12. Sambalpur	..	1. Baragarh 2. Deogarh 3. Jharsuguda 4. Kuchinda 5. Padmapur 6. Redhakhol 7. Sambalpur 8. Sohela
13. Sundargarh	..	1. Banei 2. Rajgangpur 3. Rourkela 4. Sundargarh

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CHAPTER IV

COMMUNICATIONS

Routes and Highways in Ancient Orissa

The progress and prosperity of a country much depend upon the facilities of communications. The hoary antiquities of Orissa indicate that she was connected with other countries by some well-known routes and that there were a good deal of facilities of communication inside. Very little is, however, known about the modes of communication in early period of her history. The Mahavaga¹ of the 'Vinaya Pitaka' states that the two merchant brothers named Tapasu and Bhallika of Utkala (Utkal) while going to Madhya-Desa with five hundred cart-loads of merchandise met the Buddha at Bodhgaya and they were the first persons to feed him with honey after his attainment of enlightenment. The 'Chula Kalinga Jataka'² describes how four princesses of Kalinga travelled in a chariot from Dantapura through neighbouring kingdoms and at last reached the city of Assaka. Dantapura is described as a flourishing capital of Kalinga in the 'Kurudhama Jataka'³ the 'Kumbhakara Jataka'⁴ and the 'Kalingabodhi Jataka'⁵. The city is also referred to in the Buddhist work Datha-Vamsa⁶ and the Jaina work 'Uttaradhyana Sutra'⁷. Pliny⁸ calls the city Dondaguda or Dondagula which was, according to him situated at a distance of 6,25,000 paces or about five hundred and seventy miles from the mouth of the Ganges. The city is named as Palura in the Geography of Ptolemy⁹ and Dantakura in the Mahabharata¹⁰. It is thus evident that in the pre-Buddha period and also in the Buddha Age, Dantapura was not only the capital of Kalinga but also a famous emporium that was connected with other countries and cities with good highways.

The Astadhyayi of Panini¹¹, ascribed to the fifth century B. C., refers to the flourishing trade of Taitila Janapada which is identified with the Titilagarh region of modern Balangir district.¹² The Seri Vanija Jataka¹³ describes the river Telavaha (modern

1. Sacred Books of the East, XIII, pp. 81-84
2. V. Fausboll (ed)-The Jataka III, No. 30, pp. 1-5
3. The Jataka II, No. 276, pp. 251-62
4. The Jataka III, No. 408, pp. 228-32
5. The Jataka IV, No. 479, pp. 143-48
6. B. C. Law (ed)—Dathavamsa (Punjab Sanskrit Series)
7. Uttaradhyana Sutra XVIII, pp. 85-86
8. Naturalis Histria, Book VI, XXIII, p. 72
9. Ptolemy VII, 16, Also Gerni's Researches, p. 743
10. Mahabharata, Udyoga Parva, XXIII, 708, Drono Parva LXX, 7
11. Astadhyayi VI, 2.42
12. V. S. Agrawala—India as known to Panini, p. 61 and 440
13. The Jataka I, p. 111

Tel in Kalahandi-Balangir districts) as an important water route in ancient time. The account of flourishing trade of this part of Orissa with other countries is corroborated by the discovery of large hoards of punch-marked coins at Asurgarh in Kalahandi district and Sonapur in Balangir district. Some of these coins are datable to the pre-Mauryan period. They bear on the obverse a group of four symbols resembling closely those of Bijnor hoard, described by Durgaprasad¹, and those of Paila hoard, described by Walsh². On the basis of these evidences Dr. N. K. Sahu³, observes that "The Sonepur-Tilagarh region appears to have been connected with towns like Dantapura and Pithunda in the coastal region of Kalinga on the one hand and Kausambi and Kasi in ancient Kosala on the other hand "during the fifth and the fourth centuries B. C.

In the middle of the 4th century B. C., Mahapadmananda vanquished the king of Kalinga named Sunanda and the king of South Kosala named Sumitra and annexed their territories to Magadh empire. It is not definitely known as to which route this great Nanda invader followed during his campaign against Kalinga and South Kosala. Shri P. Acharya,⁴ suggests that there were trade and pilgrim routes from the Subarnarekha valley in Manbhum-Singbhum and northern Mayurbhanj district to the Vaitarani valley in western Mayurbhanj, eastern Keduja up to Anandapur and from Anandapur a route ran up to Puri. He thinks that this route was followed by the Nanda king and also Asoka and later on by Kharavela.

It seems that there was a good road from Pataliputra to Tamralipti which was a flourishing port. It was from this port that Asoka bade farewell to his daughter Theri Sanghamitra when she sailed to Ceylon (Sri Lanka) with the sappling of the sacred Bo tree⁵. In the district of Mayurbhanj, punch-marked coins of the Maurya period have been discovered at Bahalda region, a very large hoard of Kushan coins belonging to early Christian centuries have been unearthed at Bhanjia and Khiching whereas some Roman gold coins have been brought to light in Bamanghati region. This indicates that the district of Mayurbhanj was connected with the port of Tamralipti through ages. It is very likely that Asoka during his campaign against Kalinga proceeded from Pataliputra along the Ganges to

1. J. NSI, Vol. I, pp. 1-4

2. Ibid, Vol. II, pp. 15-29

3. Utkal University History of Orissa, Vol. I, p. 233

4. P.I.H.C. (1955), pp. 46

5. Mahavamsa XI, pp. 20-23

Tamralipti. In fourth century A. D., Samudragupta, the Gupta monarch, took an altogether different route during his south India campaign. He marched along the river Sone into the present Madhya Pradesh and then on entering South Kosala, took the course of the Mahanadi. He proceeded up to Sonapur, the Kosala region, along the Mahanadi and then taking the course of the river Tel, got into the Kantara kingdom which is identified with the territory comprising parts of modern Kalahandi and Phulabani districts. From there, he marched towards south-east and crossing the Kalinga ghat entered Kalinga region. The territory of Kalinga, during that period, had been divided into a number of principalities, each under a petty chieftain. Samudragupta passed through atleast three of these principalities, namely, Pistapura, Kottura and Eranadapalla.

In second century A. D., the Mahayana philosopher Aryadeva is known to have visited the monastery of Nagarjuna at Parimalagiri (the Gandhamardan hill) of South Kosala¹. He proceeded from his native place Simhapura which was the capital of Kalinga and probably travelled through the Kalinga ghat. In early Christian centuries, Parimalagiri and Muchalinda Buddha Vihara² of Kosala were famous centres of learning which attracted students from different parts of India. Both the Viharas were located in modern Padmapur subdivision of Sambalpur district. There must have been some roads for easy approach to these places.

In the 4th century A. D., Kalidas refers to a route to Utkal and Kalinga while describing the war campaigns of king Raghu in his "Raghuvamsa"³. The epic king, after crossing the river Kapisa (modern Kanshi in Midnapore district of West Bengal) marched towards Kalinga through the route, shown by the Utkals. In this Kavya, Utkal is mentioned after Sumha and Vanga. It appears that there was highway connecting Sumha, Vanga, Utkal and Kalinga in A. D. 4th-5th centuries.

In the 7th century A. D., Sasanka, king of Karnasuvarna and Harsha, king of Kanauj, in course of their campaigns against Orissa, marched through Dandabhukti (Midnapore and Mayurbhanj) and Seraphahara Visaya (Soro in Baleshwar) and entered Kongada country (north Ganjam).

1. N. K. Sahu, Buddhism in Orissa, p. 104

2. The structure of the Vihara has been brought to light as a result of a trial excavation conducted by Dr. N. K. Sahu in May-June, 1978

3. Raghuvamsa IV, 38

The contemporary Chinese traveller Hiuen Tsang followed the same route. From Tamralipti he travelled north-west for above 700 li to Karnasuvarna and then travelling south-west for another 700 li, reached Wu-tu, the Odra country¹. Here he visited the Puspagiri monastery and Charitrapura (Cha-li-to-lo)². The latter place was located near the sea-shore to the south-west of Wu-tu and is identified by scholars with the modern township of Puri³. From Wu-tu, Hiuen Tsang marched south-west about 1200 li and reached Kongoda⁴. From Kongoda, he again proceeded south-west for 1400 li or 1500 li and entered Kalinga⁵. He then probably crossed the Kalinga ghat and travelling through jungles and forests for above 1800 li reached the kingdom of South Kosala. He went to Andhra (An-to-lo) country from Kosala⁶.

It appears from the above description that in very early period, Kalinga and South Kosala were linked by highways with Vanga in the north, Andhra-desh in the south and Magadh in the west. In between Kalinga and South Kosala stood the Kalinga ghat which served as the gateway for traders and travellers as well as for invaders and conquerors. The Chalukya king Pulakesin II in 7th century⁷, the Rastrakuta king Dantidurga in 8th century⁸ and Govinda III in 9th century⁹ subdued the Kalingas and entered Kosala apparently through the Kalinga ghat.

In the 8th century A. D., the Bhaumas came from the north and established their kingdom in Tosali. In 9th and 10th centuries the Somavamsis and the Kalachuris occupied Kosala from the west. The former extended their territory along the courses of the river Mahanadi over coastal Orissa. On the other hand, the Imperial Gangas from coastal Orissa penetrated into Kosala region through the upward course of the Mahanadi.

The epigraphic records of medieval times reveal the names of some important high roads inside Orissa. The Sumandala plate¹⁰ refers to a Parakkalamarga Visaya which was a subdivision located probably by the side of highway named Parakkala. The

1. Watters II, pp. 189-93

2. Ibid, pp. 193-94

3. Cunningham, Ancient Geography of India, p. 510

4. Watters II, pp. 196-97

5. Ibid., pp. 198-99

6. Ibid., pp. 200-20

7. The Aihole Inscription, EI, VI, pp. 1 ff

8. The Samangada plates, Ind, Ant. XI, p. 108

9. The Sanjan plates, EI, XVIII, pp. 245 and 253

10. O. H. R. J., Vol. I, pp. 66—69, EI, XXVIII, pp. 79-85

Kama-Nalinakshapura grant¹ of the Ganga king Samantavarman mentions the name of Dharmaraja Kalinga marga which was probably named after the great Sailodbhava king Dharmaraja II. The Baloda charter² of Tivara Deva, king of Kosala, registers the donation of a village situated on the side of the highway named Sundarika Marga. The Asankhali grant of Narasimha Deva II reveals the name of a highway as Rajapatha on the side of which was located the village Vamsada.

A large number of copper plate charters of medieval period register grant of villages of lands in favour of the Brahmanas who migrated from the other state and settled in Orissa. The migrations of these Brahmanas suggest that Orissa was connected with other parts of India by some inter-state routes during that time. A study of these copper plates reveal that the Brahmanas migrated to Orissa mostly from Madhya Desa, Sravasti Mandala and Varendri Mandala. Madhya Desa denoted the upper-Ganges valley which comprised the empire of Harsha in the first half of 7th century A. D. with Kanyakubja (Kanauj) as the capital. The Brahmanas of Madhya Desa are, therefore, known as the Kanyakubjins. Sravasti or Sravasti Mandala is identified with Sahet-Mahet of Uttar Pradesh. Varendra Mandala was located in north Bengal. Many Brahmanas came to Orissa from a number of other places also. In fact, the Brahmana migrations supply an important clue for the study of highways in medieval times.

In 1022-23 A. D., the army of Rajendra Chola proceeding Vengi entered Orissa territory through Chakrakota Mandala (Bastar district of Madhya Pradesh). From Bastar, the Cholas marched through modern Koraput and Kalahandi districts and taking the course of the Tel river, reached the Mahanadi at Sonapur. After subduing the Somavamsis at their capital Jajatinagar (Jakti or Jagati) a few miles east of Sonapur, the army proceeded to Dandabhukti situated in the western Midnapore district of modern West Bengal. A journey from Jajatinagar to Dandabhukti in 11th century A. D. might have been taken up by two different routes. The first route followed the upper course of the Mahanadi and proceed towards Viraja and then passing through Bhadrak, Sarephahara (Soro), Sitabinji and Khijingakotta reached the Dhalabhum territory of the eastern Singhbhum from where Dandabhukti was quite approachable. The second route proceeded from Jajatinagar to Suvarnapur and then crossing the Mahanadi passed through Radhamba Pali-Kandara (Redhakhol) to Bonai Mandala and

1. O.H.R.J., Vol. VII, pp. 83-90

2. E. I, VII, pp. 102-07

from there to Khijingakotta which was connected with Dandabhukti by some good roads. It appears that the Chola army took the second route because in their record it is stated that from Jajatinagar which was Odra Desa near Boudh, they came to Kosala-nadu (eastern Kosala) comprising Sambalpur district and Banei region. After that, they avoided confrontation with the powerful Kalachuris and proceeded through Khijingakotta to Dandabhukti.¹ In about 1200 A. D. Dhoyi, the court-poet of Lakshman Sena of Bengal, wrote his Pavana-Dutam² in which he took wind Messenger through the route that had been followed by the Chola army in 1022-23 A. D.

The Tabaqut-i-Nasiri³ reveals that the Sultan of Bengal invaded Orissa in A. D. 1246-47 during the rule of Narasimha Deva I who repulsed the invasion. The Orissa army pursued the enemy from Cuttack to Garh Mandaran and thence to Lakhanavati of Bengal. In A. D. 1351, Shams-ud-din Ilyas Shah of Bengal invaded Orissa through this route.⁴

Sultan Firoz Shah Tughluq made an expedition to Orissa in A. D. 1360. Starting from Jaunpur, he first reached Bihar Sharif and then, passing through Sikhar in Manbhum came to Tinanagar (unidentified) thence to Kinyanagar (Khiching) from where passing through Kendujhar,⁵ he came to Kalkalaghati, from here he went to Cuttack *v/a* Sarang Garh, about 8 km. south-west of it. In his return journey, Firoz followed the upward courses of the Mahanadi and through western Orissa marched back to Kara.

In 1393-94, the Sarqi Sultan of Jaunpur invaded Orissa and marched to the Brahmani valley⁶, where a hoard of Sarqi coins have been discovered.

In 1422, Hosang Shah came from Mandu in Malwa to Cuttack in the guise of a horse merchant⁷. He appears to have followed the route in the Narmada valley towards the east of Madhya Pradesh and then taking the course of the Mahanadi entered Orissa.

In 1624, Prince Khuram (Shah Jahan) during his revolt against his father, entered Ganjam from the south and passing through Cuttack, Baleshwar and Mayurbhanj went to Uttar Pradesh. During the reign of Akbar, Raja Man Singh came to Orissa taking the Midnapore, Jaleshwar, Bhadrak, Kalkalaghati, Cuttack route⁸.

1. For the route of Rajendra Chola's army vide Tirumalai Inscription, E. I., IX, pp. 223 f

2. J. & P., ASB, Vol. I (NS), p. 45

3. Tabaqat-i-Nasiri, pp. 738-39, 762-63

4. JRASB, 1942, p. 75

5. JASB, 1923, pp. 278 f

6. Badaoni's Tawarikh tr. by Rankinless and Hing, Vol. I, p. 348

7. Ferishta tr. by Briggs, Vol. IV, p. 178

8. Abul Fazl, Akbar Nama, pp. 611, 615

In the time of Aurangzeb, Kahan-i-Dauran being directed to take over his new assignment in Orissa, proceeded from Allahbad and first went to Midnapore which was then "the first town after crossing the Orissa border", then to Jaleshwar and then to Cuttack¹. The Siyar reveals that all along the highway to Cuttack and Puri tanks and ponds were constructed by pious Hindus for the benefit of the pilgrims travelling to the temple of Jagannath².

The route through which the Marathas of Nagpur penetrated into Orissa is known from various records. In 1743, Raghuji Bhonsala marched to Phuljhar from where he came to Belpara in Dasapalla which is situated at the entrance of Barmul Pass on the right bank of the Mahanadi. From Belpara, the Marathas came to Padmal after crossing the Mahanadi and then marching through Narasinghapur, Baramba, Tigiria and Athagarh, all on the left bank of the Mahanadi, re-crossed the river and reached Cuttack³.

Another route passed through Sonapur to Bhojpur and leaving Sambalpur on the left, it ran to Chota Nagpur and from that place to Amarkantak and to Bundelkhand and Chhatrapur towards Nagpur. This route was suggested by Madhoji Bhonsala to the Governor of Bengal, when James Anderson and Captain Campbell were to go to Nagpur by way of Cuttack⁴.

In 1766, T. Motte was sent by Lord Clive to Sambalpur to explore the possibilities of trade in diamond. Motte travelled from Jaleshwar to Cuttack by the route which was then known as the Badasahi road. After crossing the Kathjodi river near Cuttack, Motte travelled on the right bank of the Mahanadi up to Boudh. After that he passed through the dense forest and came to Redhakhol and reached Sambalpur through Jujomura⁵. In 1770, Leckie followed the same route up to Boudh and travelled through Char-chika, Baideswar, Padmavati and Kantilo. From Boudh, he came to Sonapur and travelling through Dungripalli and Salebhata and crossing the river Ang, reached Borasambar region. He then proceeded north-west towards Raipur and Nagpur⁶. The route followed by Leckie from Sonapur to Nagpur appears a little circuitous. Sometimes before him, Rani Ahalya Bai had been to Puri on a pilgrimage from Nagpur and she passed through Raipur, Sohela, Barpali, Rampur, Binika and Sonapur. This was the common route for the traders and pilgrims from Nagpur to the coastal Orissa in the 18th Century.

1. J. N. Sarker, *Orissa in the 17th Century "studies in Aurangzeb's reign"* pp. 227—29

2. Tabataba, *Sinyarul Muta Khkhirin*, pp. 511—12

3. J. N. Sarker, *History of Bengal*, Vol. II, p. 459

4. *Calendar of Persian correspondence* Vol. V, No. 1088, Records Department, New Delhi (1901—33)

5. Reprint of Motte's Account in OHRJ, I, No. 3

6. Reprint of Leckie's Account in OHRJ, II, No. 3 & 4

Sea routes

Some indigenous work and some foreign records reveal that Orissa in ancient times maintained its relation with the outside world through sea-routes. The "Periplus" and the "Geography" of Ptolemy indicate that ships from the eastern coast of India visited foreign countries particularly East Indies and Ceylon¹. Of these ports, Dantapura and Pithunda belonged to Kalinga empire.

The account of Hiuen-Tsang reveals that Che-li-ta-lo or Srikshetra (modern Puri) was also a seaport in ancient time. It is described as a "resting place for sea going traders and strangers from distant lands"². All these ports were linked with important highways facilitating inland trade and at the sametime they carried on a flourishing over-sea trade through sea routes. There is a consensus of opinion that the people of ancient Kalinga colonised Java, Sumatra, Burma, etc.³. According to Ceylonese chronicles the left canine tooth of the lower jaw of the Buddha was brought over in a ship from Dantapura to Ceylon. The Ratnavali, a dramatic work of the 7th century A.D., describes how a princess of Ceylon was ship-wrecked on the Orissan coast. In 16th century, Raja Man Singh took the sea-route on one of his expeditions to Orissa⁴. During the Muslim rule Baleshwar developed as one important port where ships from different parts of India lay anchored. It was also a ship building centre under the state control during the Mughal rule and one Superintendent for ports and another Superintendent for ship-construction were stationed here⁵. The royal ships laden with commodities of various kinds used to ply between Baleshwar and Porabandar on the Western coast⁶.

Modes of Conveyance

In ancient time people were generally travelling from place to place on foot or by carts. The rich and noble people were however using chariots, elephants and horses. The chariots were usually drawn by horses. The army of Kharavela consisted of the conventional four divisions, namely, Maya (horse or cavalry), Gaja (elephants), Nara (infantry) and Radha or Ratha (chariots). Horses, elephants and chariots were not only used in wars but also as modes of conveyance. The Chula Kalinga Jataka⁷ describes

1. K.A.N. Sastri(ed), A Comprehensive History of India, Vol. II, p. 436

2. Watters II, p. 194

3. R. C. Majumdar, Hindu Colonies in the Far East, pp. 8, 9, 13, 14, 21 and 102

4. Abul Fazl, Akbara Nama, p. 611

5. J. N. Sarkar, Orissa in the 17th century, op. cit. 238

6. S. H. Askari, loc. cit.

7. Fausboll (ed), The Jataka III, No. 301, pp. 1-5

how four princesses of Kalinga travelled different places in chariot. Goods were transported on the back of elephants, horses and asses, but mostly on carts drawn by horses or bullocks. Rich merchants were engaging hundreds of carts at a time for trade. Two merchants of Utkal named Tapussu and Bhallika are known to have been proceeding with 500 cart-loads of merchandise when they met Buddha at Bodhgaya¹. Bullocks, horses and asses were also used in large numbers at a time, sometimes numbering several thousands, for trade and transportation of goods. Such large groups of beasts of burden was then designated as Banjari or Khadu. The procession of Banjaris or the merchant carts extended for miles together and was blocking the path sometimes for a day or two.

Various sources reveal that from early time, best type of horses were bred in Orissa. The Arthasastra² of Kautilya states that Kalinga was one of those countries which was famous for producing excellent horses and elephants. The Mahabharata³ and Raghuvamsa⁴ also refer to the elephant of Kalinga. In the 7th Century A. D., Hiuen-Tsang speaks of "the dark wild elephants" of Kalinga which were "prized by the neighbouring countries"⁵. According to the Chinese traveller, "Kongoda produced large and dark-coloured elephants which were capable of long journey"⁶. In 1360 A. D., Firoz Tughluq invaded Orissa mainly for capturing elephants. The rulers of Orissa from the medieval time called themselves the Gajapatis indicating thereby the wealth of elephants of their territory. In the untrodden jungle areas of Orissa, elephants were the best means of communication.

Some Muslim records reveal that Sukhasanas, Dolis and palanquins were much in vogue in Orissa⁷. These were used as modes of conveyance by the members of aristocratic family till recent times.

The rivers of Orissa served the purpose of water-routes specially for transport of goods. Different kinds of boats designated as Dangas, Hulis, Patwas and Chapas were plying in these rivers. The Dangas were merely dug-outs and were generally used for passenger traffic. The Patwas were long narrow boats 75 to 90 feet in length and could hold 150 to 200 maunds of grain. Hulis were similar to Patwa in build, but broader and smaller in length and could hold 60 to 80 maunds of grain. Chapas were meant for the conveyance of cattle and carts and were generally used

1. Sacred Books of the East XIII, pp.81-84

2. Arthasastra pt. I, II

3. Mahabharata II 43, 17-20

4. Raghuvamsa IV.40, 83, VI,27

5. Watters II, p. 198

6. Ibid., pp. 196-97

7. Abul Fazl, Ain-i-Akbari, p. 391, Akbar Nama, p. 610

in flood times. Big ships were used for oversea trade. Baleshwar as described above, was a ship-building centre during the rule of the Mughals.

Orissa, through ages, is thus known to have been enjoying facilities of communication and conveyance which promoted her trade and commerce and contributed to her progress and prosperity.

Account of Road communication in Orissa

Road development is an evolutionary process. Prior to the creation of the province of Orissa, parts of Oriya-speaking tracts were under different provinces. Three districts, viz., Cuttack, Puri and Baleshwar were part of Bengal and subsequently came under Bihar. Sambalpur district was under the then Central Province, the district of Ganjam and Koraput were under the then Madras province. There were twenty-six princely states which were directly under the rulers and governed by the British Government through Political Agents. There could be no thorough road communication under such circumstances. The districts which were directly under the British rule were at the tail end of different provinces and had not received any attention for development of roads. No trunk routes were developed through different Oriya-speaking tracts and each part had remained a separate entity. The first major attempt was made by Rani Ahalya Bai for establishing trunk road up to Lord Jagannath temple at Puri. This road is popularly known as Jagannath Road. Then of course all the major rivers had been left unbridged and the trunk road served only in the fair weather. During British rule no major attempt had been made for developing trunk routes till 1943. The princely states had tried to construct all-weather roads from the nearest railway stations of their headquarters. Some attempts had however been made for developing some all-weather roads in Ganjam which was under the then Madras province.

In April, 1936, the province of Orissa was formed with only 6 districts. The provincial capital was linked to Sambalpur through the princely states. During pre-independence period, Orissa had a poor communication system. After independence all the princely states except the state of Mayurbhanj were merged with the state of Orissa in 1948. The ex-state of Mayurbhanj merged with Orissa in 1949. All the old six districts and the twenty-four princely states were formed into thirteen districts. All the district headquarters were not approachable by road in all the seasons from the state capital. Road had never remained under any single administrative agency during the British period, nor did they remain so even after independence. Some of the roads remained with P. W. D., some remained with the Revenue Department, some others remained with the Forest Department, municipalities, etc. The roads were in very backward condition

and being maintained to different specifications by different agencies. Prior to independence the total road mileage in Orissa was 12,800 km. under various agencies of which 5,889 km. were under P. W. D. (R. & B.). The roads under P. W. D. were classified as A, B and C. Length of metalled roads was 385 km. and that of unmetalled roads 5,504 km.

After independence, significant changes with regard to road classification, designs and standards have taken place in various parts of the country and funds have been allocated in the annual plans for development of roads. Orissa has also taken a leap forward in improving its road network.

In different plan periods many roads in Orissa have been constructed, improved and extended.

The length of P. W. D. roads in kilometres according to category and surface classification in the state is given below as on 31st March, 1980.

Category of roads (1)	Surfaced (2)	Unsurfaced (3)	Total (4)
National Highway ..	1,614.73	16.35	1,631.08
State Highway ..	2,792.68	28.64	2,821.32
Major District Road ..	4,279.59	694.53	4,974.12
Other District Road ..	1,835.52	913.12	2,748.44
Classified Village Road ..	1,906.13	3,888.11	5,794.24
Express Highway ..	66.60	..	66.60
Total ..	12,495.05	5,540.75	18,035.80

National Highways

The National Highways are considered as main life line of the nation which connect the state capitals with places of national importance. They form the nucleus of major trunk roads on which the entire network of road communication is built. The National Highways are improved and maintained by allocation of funds by the Government of India, through the agency of State Governments.

In 1956, Government of India declared certain highways to be National Highways, the development of which is the responsibility of the Government of India. Before these highways were declared

as National Highways, they were maintained by the State Public Works Department. After these roads were declared as National Highways the same are being widened and improved wherever necessary including reconstruction, widening of narrow culverts and bridges by the Government of India through the State Agency. Still there are a number of roads in Orissa to be brought over to National Highways standard and proposals for new National Highways have been sent to Government of India by the State Government.

There is one Express Highway and six National Highways in Orissa. The road from Daitari mines to National Highway No. 5 at crossing near Chandikhol is known as Express Highway. The total length of this road is 66.6 km.

The National Highway No. 5 starts from near Jharpokharia in Mayurbhanj district and connects Madras. It passes through Baripada, Baleswar, Bhadrak, Cuttack, Bhubaneswar and Brahmapur towns of Orissa. The length of this road in Orissa is 474 km.

The National Highway No. 5A starts from Chandikhol crossing on N. H. No. 5 to Paradeep. It is entirely within Cuttack district. The length of this road is 77 km.

The National Highway No. 6 connects Calcutta with Bombay. It passes through Baripada, Kendujhar, Dhenkanal, Sambalpur and Baragarh towns in the state of Orissa. The total length of this road in Orissa is 457 km.

The National Highway No. 23 starts from Banarpal near Anugul on National Highway No. 42 and joins National Highway No. 6 at Pala Lahara. Again it takes off from Barkote on National Highway No. 6 and connects Ranchi in Bihar and passes through Talcher and Rourkela in the state of Orissa. The length of this road is 207 km.

The National Highway No. 42 known as Cuttack-Sambalpur road. It passes through the districts of Cuttak, Dhenkanal and Sambalpur. This road connects N. H. No. 5 and N. H. No. 6. The length of this road is 265 km.

The National Highway No. 43 is an inter-state road. It starts from Vizianagram on N. H. No. 5 and after passing through Patangi, Sunabeda, Koraput, Jaypur, Boriguma and Kotpad towns in Orissa connects Raipur in Madhya Pradesh. The total length of this road in Orissa is 157 km.

All the six National Highways running in the state are being maintained with the allotment of funds annually released by the Government of India in the Ministry of Shipping and Transport, and according to the specifications given by them. All maintenance, repairs, renewal, repairs after flood damage are being done out of the allotments released by the Government of India under Maintenance, Repair grant.

State Highways

There are 21 State Highways (S. H.) in Orissa with total length of 2821.32 km. These roads have touched all the districts of Orissa except Dhenkanal and Mayurbhanj. The longest State Highway is State Highway No. 1. The length of road is 362.53 km. It starts from N. H. No. 5 junction at Khorda in Puri district and runs up to Amatha in Kesinga police-station of Kalahandi district. On the way it passes through Nayagarh, Daspalla, Madhapur, Phulabani, Bisipada, Phiringia, Nuagan, Baligurha, Tumudibandha and Madanpur-Rampur. Five State Highways have passed through the districts of Phulabani, Kalahandi and Koraput. A statement about State Highways has been given in Appendix I.

Major District Roads

There are 107 Major District Roads (MDR) in Orissa with a total length of 4974.12 km. Of these, MDR-3 (Baleshwar-Chandipur) has been transferred to Government of India. MDR-50 (Papadahandi-Umarkot-Buriya Road) and MDR-53 (Kotta-Boipariguda-Govindapalli-Malkangiri-Mottu Road) have been handed over to D. D. A. Project since December, 1958. Only 18 Major District Roads have passed through two districts and one Major District Road, i. e., MDR No. 18 (N. H. 42-Khuntuni-Athagarh-Tigiria-Narsinghapur-Daspalla-Telsing-Bhanjanagar) has gone through three districts. This MDR-18 is the longest MDR in Orissa. The length of this road is 167 km.

Other District Roads

Total length of 200 Other District Roads (ODR) in the state is 2748.44 km. Of all the districts, Cuttack claims 45 roads with a total length of 397.60 km. which is the highest in the state. The longest ODR (Turekela-Kantabanji-Godighat-Tikarparha-Deng Road) is 74 km. It is in Balangir district.

Classified Village Roads

Total number of Classified Village Roads (CVR) in the state is 380. Of these roads, 82 are in Cuttack district. But total length of Classified Village Roads in Koraput district is more

(755.05 km.) than the other districts. The longest CVR in the state is CVR (Suakati-Banspal-Kadakala-Palaspanga road). It is in Kendujhar district. The length of this road is 78 km.

Rural Engineering Organisation Roads

The Rural Engineering Organisation (R. E. O.) maintains 696 roads in the state. The total length of these roads was 7,126 km. in 1980. These Rural Engineering Organisation roads connect the villages to the nearest important roads, market places and rail heads. These roads have been transferred to National Highways and Projects on abolition of Rural Engineering Organisation in 1980.

Municipality/Notified Area Council Roads

The municipalities and Notified Area Councils maintained 5247.64 km. of roads*. The district-wise figures are given below as on the 31st March, 1979 in kilometres.

Name of the district	Unsurfaced (earthen and un-metalled)	Water bound Macadam (metalled)	Black topped	Cement concrete	Total
(1)	(2)	(3)	(4)	(5)	(6)
1. Balashwar ..	396.00	162.00	93.50	..	651.50
2. Balangir ..	206.18	90.10	42.04	0.10	338.42
3. Phulabani ..	24.00	15.30	10.00	..	49.30
4. Cuttack ..	267.05	118.17	132.15	28.01	545.38
5. Dhenkanal ..	126.09	40.78	5.30	2.66	174.83
6. Ganjam ..	207.42	141.80	189.77	33.73	572.72
7. Kalahandi ..	93.40	80.00	33.20	3.11	209.71
8. Kendujhar ..	297.89	76.36	28.64	0.23	403.12
9. Koraput ..	226.13	131.27	131.13	15.57	504.10
10. Mayurbhanj ..	114.00	30.00	32.00	0.13	176.13
11. Puri ..	304.73	205.43	135.54	12.55	658.25
12. Sambalpur ..	309.33	167.18	123.67	32.15	632.33
13. Sundargarh ..	207.00	69.65	51.55	3.65	331.85
Total ..	2,779.22	1,328.04	1,008.49	131.89	5,247.64

*Annual Administrative Report for the year 1978-79, Housing and Urban Development Department, pp. 20-23.

Forest Roads

The total length of forest roads in the state is 6463·64 km.* as on the 31st March, 1979. These roads have been constructed mainly to help the people in utilising the forest resources of the state. The district-wise length of the forest roads is given below :

Sl. No.	Name of the district	Forest road length in km.
(1)	(2)	(3)
1	Baleshwar	58·45
2	Balangir	237·09
3	Cuttack	227·00
4	Dhenkanal	618·53
5	Ganjam	587·20
6	Kalahandi	565·18
7	Kendujhar	212·00
8	Koraput	499·45
9	Mayurbhanj	748·80
10	Phulabani	543·40
11	Puri	515·50
12	Sambalpur	1,098·95
13	Sundargarh	652·09
Total		6,463·64

Panchayat Samiti Roads

In addition to the Public Works Department, the Rural Engineering Organisation (now defunct), the Municipalities, Notified Area Councils and the Forest Department roads, the Panchayat Samitis and Grama Panchayats also maintain roads. The roads maintained by the Panchayat Samitis and Grama Panchayats are

* Chief Conservator of Forests, Orissa, Cuttack

generally fair-weather roads and are maintained by the grant-in-aid received from the Community Development and Rural Reconstruction Department of the State Government.

There are 314 Panchayat Samitis in the state. The total length of roads maintained by the Panchayat Samitis is 25,729.3 km. The district-wise Panchayat Samiti roads for the year 1980-81 is given in the following table.

Sl. No.	Name of the district	Number of Panchayat Samitis	Total length in km.
(1)	(2)	(3)	(4)
1	Baleshwar ..	19	1,609.6
2	Balangir ..	20	1,189.2
3	Cuttack ..	41	3,392.2
4	Dhenkanal ..	16	2,000.6
5	Ganjam ..	29	1,717.8
6	Kalahandi ..	18	1,476.0
7	Kendujhar ..	13	1,248.0
8	Koraput ..	42	4,386.0
9	Mayurbhanj ..	26	1,774.4
10	Phulabani ..	15	1,213.6
11	Puri ..	29	1,703.2
12	Sambalpur ..	29	2,668.2
13	Sundargarh ..	17	1,350.5
Total ..		314	25,729.3

Grama Panchayat Roads

During the year 1980-81, 61,333 km. of roads were maintained by the Grama Panchayats in the state. A district-wise account of the Grama Panchayat roads in kilometres is given in the following table.

Sl. No.	Name of the district	Number of Grama Panchayats	Total length in km.
(1)	(2)	(3)	(4)
1	Baleshwar ..	284	3,023
2	Balangir ..	213	3,158
3	Cuttack ..	594	7,954
4	Dhenkanal ..	229	5,460
5	Ganjam ..	407	4,180
6	Kalahandi ..	478	4,578
7	Koraput ..	170	6,396
8	Mayurbhanj ..	254	5,071
9	Kendujhar ..	234	2,427
10	Phulabani ..	368	2,873
11	Puri ...	152	5,924
12	Sambalpur ...	308	6,830
13	Sundargarh ..	139	3,459
Total ..		3,830	61,333

Road Transport

Prior to independence motor transport was very poor in the state as the roads were not fully bridged or metalled. With the improvement of roads in the state motor transport is increasing day by day. The Regional Transport Officer is in charge of a region, who is the licensing, registering and taxation authority in respect of all types of motor vehicles plying within his jurisdiction.

Number of different vehicles registered in different regions of the state of Orissa is given below.

Sl. No.	Name of the Region	Total No. of vehicles Registered	
		As on 31-3-1979	As on 31-3-1980
(1)	(2)	(3)	(4)
1.	Baleswar ..	2,855	3,107
2.	Balangir ..	2,689	3,034
3.	Bhubaneshwar ..	7,671	9,166
4.	Cuttack ..	25,512	27,979
5.	Dhenkanal ..	3,056	3,430
6.	Ganjam ..	6,807	7,561
7.	Kalahandi ..	1,892	2,123
8.	Koraput ..	4,335	4,887
9.	Kendujhar ..	4,329	4,585
10.	Mayurbhanj ..	2,549	2,911
11.	Phulabani ..	740	892
12.	Puri ..	3,279	3,535
13.	Rourkela ..	16,023	17,514
14.	Sambalpur ..	11,845	12,759
15.	Sundargarh ..	2,992	3,218
Total ..		96,574	1,06,701

There are two Public Sector Road Transport Undertakings functioning in the state. One is the Orissa State Road Transport Corporation established under the Road Transport Corporation Act, 1950 with effect from the 1st May, 1974, and the other is O. R. T. Company Ltd., a tripartite joint-stock company set up in the year 1951 under section 619 (A) of the Indian Companies Act. The

O. S. R. T. C. is operating in ten districts of the state, viz., Cuttack, Dhenkanal, Sambalpur, Sundargarh, Balashwar, Balangir, Mayurbhanj, Kendujhar, Kalahandi and Koraput. The Orissa Road Transport Company is operating services in the remaining 3 districts of the state, i. e., Puri, Ganjam, Phulabani and also in a part of Cuttack district.

For the convenience of the passengers inter-district and inter-state buses are plying. Inter-state routes are operated as per the terms and conditions of the reciprocal agreements between the Government of Orissa and its neighbouring states of Andhra Pradesh, Madhya Pradesh, Bihar and West Bengal.

The number of buses plying, the number of routes operated, the number of passengers travelling daily, etc., by these undertakings in the years 1978-79 and 1979-80 are given below :

Particulars	Orissa State Road Transport Corporation		Orissa Road Transport Company Limited	
	1978-79	1979-80	1978-79	1979-80
(1)	(2)	(3)	(4)	(5)
Total No. of buses plying (effective).	567	571	319	266
No. of routes operated	341	401	173	173
No. of passengers travelling daily.	344.71 lakhs.	396.05 lakhs.	224.16 lakhs.	231.61 lakhs.
Total kilometres covered daily.	412.45 lakhs.	452.05 lakhs.	184.74 lakhs.	186.37 lakhs.

Orissa State Commercial Transport Corporation is the only state managed goods carrying organisation in the state. It has a fleet of 172 vehicles out of which 56 vehicles remained off-road and 116 vehicles are now operating in the state for carrying goods and materials.

Besides the two Public Sector Road Transport Undertakings, viz., the Orissa Road Transport Corporation and the Orissa Road Transport Company Limited, many vehicles are also plying in the state. The former faced keen competition with the latter in all their operational areas. In order to avoid such unhealthy competition from the private vehicles, 48 routes in the state are notified for exclusive operation by the two former organisations, i. e., 16 routes by the Orissa Road Transport Company Limited and 32 routes by the Orissa State Road Transport Corporation.

Road accidents

The total number of road accidents that occurred in the state from 1975 to 1979 is given below.

Year		No. of accidents
1975	..	2,686
1976	..	3,053
1977	..	3,358
1978	..	4,044
1979	..	4,525

It is clear from the statement that the road accidents are increasing in the state. To prevent congestion and avoid accidents Transport Department has recently created a "Traffic Education and Publicity Unit" to educate the general public about traffic consciousness and impart knowledge of salient provisions of motor vehicle laws in order to reduce road accidents.

Railways

The South-Eastern Railway has the distinction of being the only railway system serving the entire state of Orissa. The headquarters of this railway is at Calcutta. It has seven divisions, viz., Kharagpur, Chakradharpur, Bilaspur, Nagpur, Adra, Waltair and Khordha Road. Except Nagpur and Adra, other five divisions have jurisdiction in the state of Orissa. Of these, Khordha Road Division has the largest jurisdiction in the state. The headquarters of this division is situated at Jatni in Puri district of Orissa.

Out of the 13 districts of the state only Phulabani district is deprived of railway facilities. The South-Eastern Railway runs through 217 railway stations and 25 passenger halts in the state. It covers 1,947.79 km. of which 1,804.76 km. belong to broad gauge. The rest is narrow gauge. The state has 13 km. of railway line per 1,000 sq. km. of area as compared to 18 km. in all India, 31 km. in Bihar, 17 km. in Andhra Pradesh and 43 km. in West Bengal which are the neighbouring states of Orissa.

The history of construction of railway lines in Orissa is marked by the construction of two trunk routes from Calcutta to Madras and Bombay. Besides, rail lines were laid in the state to tap the mineral deposits like coal, iron-ore, bauxite, etc., and to the seat of Lord Jagannath in view of its importance as a place of pilgrimage. A list pertaining to the construction of railway lines in Orissa is given below in chronological order.

Sl. No.	Section of railways	Date of opening	Kilometres
(1)	(2)	(3)	(4)
1	Goilkera to Jharsuguda ..	1-2-1891	168.83
2	Jharsuguda to Sambalpur ..	1-2-1893	48.22
3	Palasa to Nauparha ..	17-12-1894	25.27
4	Brahmapur to Palasa ..	1-4-1895	74.01
5	Rambha to Brahmapur ..	1-9-1895	47.54
6	Khorda Road to Rambha ..	1-3-1896	99.13
7	Bhubaneswar to Khorda Road ..	20-7-1896	18.92
8	Cuttack to Bhubaneswar ..	1-2-1897	27.68
9	Khorda Road to Puri ..	1-8-1897	43.55
10	Kharagpur to Baleshwar ..	17-12-1898	115.70
11	Baleshwar to Cuttack ..	10-1-1899	177.69
12	Nauparha to Paralakhemundi ..	1-4-1900	39.62
13	Rupsa to Baripada ..	20-1-1905	52.16
14	Tatanagar to Aunlajori ..	1-2-1911	55.21
15	Aunlajori to Gorumahisani ..	6-4-1911	9.82
16	Baripada to Bangriposi ..	15-7-1920	37.20
17	Koel Bank to Biramitrapur ..	22-1-1922	22.30
18	Aunlajori to Badampahar ..	23-10-1922	34.91
19	Rajkharsuan to Dangoaposi ..	17-1-1924	74.92
20	Dangoaposi to Padapahar ..	20-9-1925	5.16
21	Padapahar to Gua ..	20-9-1925	25.13
22	Barajamda to Barbil ..	16-2-1926	7.84
23	Rourkela to Koel Bank ..	17-9-1926	3.93
24	Nirgundi to Talcher ..	20-1-1927	98.62
25	Khariel Road to Harishankar Road ..	30-3-1930	41.11

Sl. No.	Section of railways	Date of opening	Kilometres
(1)	(2)	(3)	(4)
26	Harishankar Road to Titilagarh ..	30-9-1930	57.57
27	Tiruveli to Rayagarha ..	31-3-1931	18.58
28	Paralakhemundi to Gunupur ..	16-11-1931	50.99
29	Titilagarh to Tiruveli ..	20-12-1931	120.02
30	Padapahar to Banspani ..	18-4-1958	28.66
31	Barbil to Bolanikhadan ..	19-4-1960	8.18
32	Bondamunda to Barsuan ..	20-4-1960	66.76
33	Sambalpur to Balangir ..	15-5-1963	118.93
34	Balangir to Titilagarh ..	15-5-1963	62.93
35	Bondamunda to Hatia ..	26-1-1964	162.03
36	Bimlagarh to Kiruburu ..	22-4-1964	40.86
37	Barang to Raj Athagarh ..	19-11-1966	24.94
38	Kapilas Road to Salagan ..	21-1-1968	5.30
39	Kottavalsa to Kirandul ..	1-11-1968	445.00 (159 km. in Orissa)
40	Bondamunda to Banspani ..	20-4-1970	69.22
41	Cuttack to Paradeep ..	9-7-1973	84.31
42	Jakhapura to Daitari ..	March 1981	33.00

Orissa has a population of more than two crores and is rich in mineral resources and forest produce finds a unique place in the industrial map of India. The railway has not only contributed to the economic growth of Orissa but also of other neighbouring states. It has accelerated agricultural and industrial development by providing transport facilities for the carriage of raw materials and finished products to Rourkela Steel Plant, Orient Paper Mill at Brajarajnagar, Lathikata Refractory Mill, Titagurh Paper Mill, Orissa Textile Mill, Kalinga Tubes at Chaudwar, cement factories at Rajgangpur and Baragarh, glass factory at Barang, ferro-alloy factory at Tiruveli, J. K. Paper Mill at Rayagarha and other industries of the state.

During the post-independence period and particularly with the implementation of five-year plans, construction of new lines, new marshalling yards and doubling of the existing lines was undertaken to cater the needs of the new public sector steel plants and new ports. The prominent constructions in Orissa after the commencement of the plan era are Nuamundi-Banspani, Barbil-Bolani, Bondamunda-Barsuan, Bondamunda-Nuagan, Nuagan-Purunapani, Sambalpur-Titilagarh, Waltair-Kirandul and Cuttack-Paradeep.

Apart from this, construction of Jakhapura-Banspani broad gauge line (108 km.) is under progress. In the first phase, construction of Jakhapura-Daitari (33km.) line was completed and opened to traffic on the 20th March, 1981. The preliminary Engineering-cum-Traffic Survey of Talcher-Sambalpur proposed line (158 km.) has been completed. The techno-economic report on the conversion of Rupsa-Bangriposi narrow gauge section into broad gauge with extension to Chakulia/Gorumahisani (132 km.) or any other suitable point on Kharagpur-Tatanagar main line is under consideration. The survey work on the 170 km. long proposed Koraput-Parvatipuram new broad gauge line is in progress.

One railway carriage repair workshop is also under construction at Mancheswar near Bhubaneswar. The planned capacity of this workshop for periodical overhaul will be 4 coaches per day which will be enhanced to 8 coaches per day in the second phase. It is expected that full capacity for periodical overhaul corresponding to phase I will be reached in 1984-85.

Waterways

The network of rivers in the state may give an impression that the state has good water communication facilities, but it is not so. The anicuts on the rivers have prevented direct communication between the lower and upper reaches. Enormous flow of water during rains and insufficient flow during summer also make communication impossible. The communication available on the rivers Mahanadi, Brahmani, Baitarani, Subarnarekha, Burhabalanga, tidal waterways of Devi and other inter-connected creeks are mostly for goods. Some amount of traffic (mainly goods) is also carried on over the High Level Canal, the Coast Canal (Baleshwar district); Kendraparha-Marsaghai canal, Taldanda canal (Cuttack district); Puri canal and Chilika lake (Puri district). In the state Balugan-Krushnaprasad, Balugan-Nuapara (Puri district); Chandbali-Aradi, Chandbali-Dhamara-Talchua (Baleshwar district) and Cuttack-Chaudwar (Cuttack district) water routes are important and opened to traffic throughout the year. The motor launches and country boats are generally used to carry passengers and goods.

Prior to the construction of the National Highways in 1964 and other road links, rivers and canals were mainly used as route for trade purpose. Almost all the requirements used to be transported through the waterways. The construction of roads has brought down the traffic in the waterways from over one lakh tonnes to about 30,000 tonnes now. There was a traffic of over two lakh tonnes in timber and bamboo in the river Mahanadi from Dolpur in Boudh subdivision to Cuttack. Due to the non-completion of the Mundali lock almost half the traffic is diverted by roadways. Passenger traffic in the canals has come to an end as good roads have been developed along the banks and road transport facilities are now available.

Ferry

There are number of ferries throughout the state. They are mostly of local nature and are fit to transport a few persons and light vehicles only. Mechanised ferries with facilities to ferry across heavy vehicles like truck, bus, etc., are altogether absent.

Bridges

Prior to independence, most of the roads in the state of Orissa were unbridged. This was a great handicap in the development of road transport in the state. After independence effective steps were taken for the construction of bridges over most of the rivers and *nullahas*. The number of major bridges, minor bridges and culverts in Orissa for the year 1978-79 are given below*.

Category of roads	Number of		Culverts	Total
	Major bridges	Minor bridges		
(1)	(2)	(3)	(4)	(5)
National Highway**	108	197	3,100	3,405
State Highway	93	358	4,231	4,682
P. W. D. Roads other than N. H. & S. H.	238	1,085	17,339	18,662
Total	439	1,640	24,670	26,749

* Basic Road Statistics of India, 1975-76 to 1978-79, pp. 18-37

**The Chief Engineer, National Highways, Orissa, has recorded 86 major bridges and 332 minor bridges on National Highways in Orissa as on 1-8-1992. The figures given in Basic Road Statistics of India appear to be incorrect.

Details about some of the major bridges in the state are given below.

Sl. No.	Name of Bridge	Location of bridge on road and district (3)	Date/year of opening to traffic (4)	length (in ft.) (5)	Width (in ft.) (6)	No. of spans (7)	cost of bridges (in lakhs) (8)
1	Mahanadi	.. N.H.5 Cuttack	1964	7,392	24	45 spans of 162'0" and 2 spans of 51'0"	142.60
2	Birupa	.. N.H.5 Cuttack	1964	1,733	24	1 span of 79'0" and 45 spans of 107'11"	38.467
3	Kathjodi	.. N.H.5 Cuttack	1951	2,828	24	17 spans of 160'0" and 2 spans of 54'0"	..
4	Brahmani	.. N.H.5 Cuttack	1966	2,184	24	16 spans of 136'6"	61.55
5	Kharsuan	.. N.H.5 Cuttack	1966	1,501	24	11 spans of 136'6"	42.90
6	Rushikulya	.. N.H.5 Ganjam	1981	1,760	24	11 spans of 160' each	136.00
7	Burhabalanga	.. N.H.5 Baleshwar	1981	..	24	44 spans of 6.115m each	..
8	Jira	.. N.H. 6 Sambalpur	1980	..	24	..	64.24
9	Kuakhai	.. N. H. 5 Puri	1950	1,696	24	15 spans of 106 ft. each and 2 end spans of 53 ft. each	..
10	Baitarani	.. N.H.5 Cuttack	..	3,142	24	23 spans of 136'6" each	..
11	Burhabalanga	.. N.H. 5 Baleshwar	..	820	24	6 spans of 136'6" each	..
12	Salandi	.. N. H. 5 Baleshwar	..	540	24	9 spans of 60' each	..
13	Kansabansa	.. N. H. 5 Baleshwar	..	200	24	3 spans of 60' each and 2 spans of 10' each	..
14	Subarnarekha	.. N. H. 6 Mayurbhanj	1960	755	24	..	..

Ports

Baleshwar, Chandbali, False Point harbour, Puri and Gopalpur used to be flourishing ports in the nineteenth century in Orissa. The main exports through these ports used to be rice, horns, hides and skins. The imports used to be mainly kerosene, consumer goods, medicines, etc. In course of time the ports of Baleshwar, False Point harbour and Puri became inactive due to silting up of river mouths and decrease in traffic over the sea. These ports lost their importance on the advent of the railways and were ultimately abandoned between the years 1923 and 1936. The port of Gopalpur was practically abandoned in the year 1942 on account of the Second World War and also due to the travel restrictions imposed on Indian immigrants in Burma (Myanmar). The port of Chandbali which had a negligible rice traffic of less than 10,000 tonnes a year was abandoned by shipping companies in the year 1961.

During the Third Five Year Plan the State Government developed a Major Port at Paradeep in Cuttack district. In the Fourth Five Year Plan period fishing harbour facilities were developed in Chandipur and Dhamra both in Baleshwar district. Preliminary works on the development of a commercial-cum-fishing harbour at Gopalpur have been taken up by the State Government.

Details about Paradeep, Dhamra and Gopalpur ports are given below.

Paradeep Port

Paradeep is a deep water, all weather port. It is situated at lat. $20^{\circ}15'56''$ N., long. $86^{\circ}40'34''$ E., i.e., roughly 210 nautical miles south of Calcutta and 260 nautical miles north of Vishakhapatnam. It is about 96 kilometres east of Cuttack.

Artificial lagoon type harbour formed by two north and south arms projecting from low, sandy coast, about 588 m. and 1,217 m. respectively. An approach channel of length 1,850m. and width 190m. at (—) 12.25m depth followed by an entrance channel of length 800 m. and width 160 m. at (—) 11.75 m. depth connects open sea to the lagoon of 520 m. diameter to entertain vessels of 39' draft, 850' L. O. A. The berthing facilities in the form of wharfs, jetties, stream moorings are provided inside the harbour.

This is the first mechanised wharf of the port which was opened to traffic immediately after its completion in the year 1966. With an overall length of 320.5m. the wharf has an effective length of 155 metres to accept vessels of 60,000 to 80,000 DWT with L. O. A. 850' and draft 39'. The rated capacity of Iron-ore Handling Plant is 2,500 tonnes per hour with annual capacity of 3.5 million tonnes of iron-ore.

This is a multipurpose berth used generally by vessels loading general cargo, sugar, foodgrains, pig-iron, coal, frozen shrimps, etc. The length of the pier is 290 metres and the draft maintained is up to 35'. The transit shed is designed on modern lines. The column spacing has been kept wide enough to allow the use of mobile cranes, fork-lifts and other cargo-handling equipments. The transit shed is served with rail lines in the front as well as in the rear. Construction of first, second and third general cargo berth have been completed.

Communications

The port is well-served by road, rails and inland waterways. Bhubaneshwar, the nearest air-port is about 120 km. from the port. There are regular plane services to places like Delhi, Calcutta Varanashi and Hyderabad.

The Harbour Office is equipped with V.H.F radio with maritime channels—calling channel-16, working channel-9.

Marine Services

The channel which requires constant maintenance is taken care of by the port's own hopper suction dredger and shore-based sand pump.

Pilotage

The pilotage of about 1 to 1½ hours including berthing and unberthing vessels is provided by the port's own highly skilled pilots. They are assisted by the port's powerful shipping tugs, Pilot Launches, power-driven Mooring Launches, etc. The port will be open to night pilotage shortly.

Water Supply and Bunkering

Along-side berths has water supply connection for unrestricted water supply to ships and the mid-stream berths water is supplied by the port's own barges.

Bunkers are supplied by tank lorries ex-Cuttack depot 50 to 60 tonnes per day with prior arrangement with Indian Oil Corporation.

Ship Repairs

A slipway for port crafts is nearing completion. The port workshop is well-equipped for temporary hull and engine repairs if required by vessels calling at the port.

Administration

The port of Paradeep is administered by a Board of Trustees set up by the Government of India under the Major Port Trusts Act, 1963. The Chairman of the Board of Trustees is appointed by the Government of India. All the Trustees are nominated by the Government of India from various organisations, such as, shipping and commercial interests connected with the port.

Dhamra Port

Dhamra is situated in lat. 20°48' north and long. 86°54'E., on the northern bank of the navigable channel of Dhamra river, which discharges into the Bay of Bengal and is formed by the confluence of river Brahmani and Baitarani. Dhamra is at a distance of 7 km. from the river outlet into the sea, 18 km. from down stream of Chandbali town. Chandbali and Dhamra are together notified as the Port of Chandbali (Dhamra) under the Indian Ports Act, 1908.

Administration

Conservancy of Dhamra Fishing Harbour is under the administrative control of Commerce and Transport (ports) Department.

Composition of Trade

It is only a fishing port.

Berthing facilities for fishing boats and fishing trawlers

A 200 metres long, 8 metres wide platform has been constructed over precast piles of 15 m. x 0.30 m. x 0.30 m. foundation. Wooden fenders and iron ladders have been fitted to the face of the quay. Deck bollards of 10 tonnes capacity have been fitted. About 4 metres depth of water below chart datum is available in L. L. W. S., in the river which is about 500 metres of width. The dredged level alongside the landing quay is proposed to be 2.00 metres which gives a keel clearance for the 15m. boats of about 0.5 m. at L. L. W. S. in the months of February to April when seasonal variation of mean level is most severe.

Auction and Packing Halls

For packing of fish and auction sale the "Auction and Packing Halls" with floor area of 40 m. x 30 m. of raft foundation have been constructed. It consists of three marketing rooms, one office room and one public hall. Three numbers of fish boxes of size 9m. x 5m. and two numbers of sorting and weighing tables of size 5 m. x 1m. x 1. m. have been provided.

Communication

The harbour is approachable from Chandbali town by river Brahmani. The harbour is not connected by any road. A new road is being constructed connecting Dhamra with Basudebpur. After the completion of this road the port will be served by Bhadrak railway station which will be 86 km. by road.

Water supply and bunkering

Water supply line has been connected to landing quay for supplying of water to fishing boats and trawlers. There is also a provision for setting up diesel outlet at one end of the landing quay.

Boat repair yard

A boat repairing yard with a slipway and transfer track has been constructed for repairing of hull and engine of 10 nos. of boats at a time. The slipway is designed to cater for a boat of 60 tonnes maximum weight. A workshop of 24 m.X8 m. adjacent to the repair track and a boat repair quay have been constructed. Workshop machineries are being installed.

Gopalpur Port

Gopalpur (lat. 19°15' N., long 84°54' E.) is an open roadstead with no shelter, but landing and shipping operations are possible throughout the year except occasionally when the surf is too high. A small stream enters the sea close to north-eastward of the town but it is not navigable even for small boats.

Like other exposed ports on this coast, Gopalpur is no longer visited by shipping and there has been no sea house trade with the port since 1942.

Open roadstead

Ships can anchor, i.e., 11 m. to 18 m. at a distance of about 800 m. from the shore off at Aryapalli port site.

Lighterage port

A modern lighterage port is being constructed 8 km. north of Gopalpur-on-sea and 6 km. from Chhatrapur town at Aryapalli. Minor repair facilities will be provided here. The new port will provide for loading of ships by self-propelled barges of 200 tonnes capacity during any time and by 500 tonnes capacity barges during high tide

The port is scheduled to be operated from mid-October to mid-April and during monsoons it will not normally operate for a regular traffic.

Aviation

The State Government maintains two V. I. P. aircrafts and two trainer aircraft. The Super king D-200 aircrafts is a twin engine aircraft mostly used in long distance flights with a capacity of 8 to 10 passengers on board. The smaller aircrafts D-58 which is also a twin engine aircraft is used inside the state with four passengers on board. The two trainer aircrafts of which one is of Pushpak make, are used for imparting training to the civil and N. C. C. students.

There are 22 aerodromes/airstrips in Orissa of which 3 belong to Government of India, 4 belong to private parties and the rest 15 belong to the State Government. There are also 16 helipads in the state. These are mainly located in the district of Baleshwar, Cuttack, and Puri. A list of aerodromes, airstrips and helipads are given in the Appendix II.

The Indian Airlines operates a direct flight from Delhi to Bhubaneshwar via Varanasi on four days a week, and between Calcutta and Bhubaneshwar on three days a week. The Calcutta-Hyderabad flight via Bhubaneshwar is operated on four days a week.

Travel and Tourist facilities

In the year 1974-75 the Department of Tourism was formed to cope with the demands of expanding tourism in the state. In order to convert the vast tourism potentials of the state, the Government have evolved a "two-pronged" strategy—one by developing suitable infrastructure in the state and the other by projecting its tourist image outside. To advise the Government in planning the strategy in the right manner, the Orissa Tourism Development Advisory Board has been set up under the chairmanship of the Chief Minister. Due to constrain of resources the areas identified for investments are broadly classified into (a) tourist information and publicity, (b) tourist accommodation and (c) tourist transport service.

Tourist Information and Publicity: In the information sector Tourist Offices were opened by the end of March 1979, fourteen within and two outside the state and two more have been proposed. In the publicity sector an intensive drive has been launched to expose the tourism potentials of the state. Apart from the publications, such as, the Orissa Tourism Directory, the Tourist Map of Orissa, Little known aspects of woman in Konarak, A day in the life of Lord Jagannath, Accommodation Facilities in Orissa, New Dimensions of Tourism in Orissa and a good number of

picture cards, the department is bringing out a bi-monthly news letter called the "Orissa Tourism News Letter", which has been widely appreciated. The department also produces a Tourism calendar every year.

Tourist accommodation—The promotion of tourist traffic in the state demands largely on availability of adequate accommodation for the tourists belonging to different economic groups. As the prime responsibility of the state is to develop domestic tourism, the State Government have united their activities to the construction of Tourist Bungalows which are mainly intended to cater to the needs of the low income group tourists. By the end of the Fourth Five Year Plan, the number of Tourist Bungalows available in the state was five, one each at Puri, Bhubaneswar, Konarka, Rambha and Chandipur. The 65 rooms of different types available in these bungalows have provisions for 127 beds. The Fifth Five Year Plan has witnessed the construction of the sixth one at Sambalpur. With its commissioning, the number of rooms in the Tourist Bungalows of the state has increased to 89 with the provision of 175 beds. Recently two more Tourist Bungalows, one at Nrusinghanath in Sambalpur district and the other at Puri (second Tourist bungalow) have been commissioned. Besides, 4 erstwhile inspection Bungalows of the Works Department have been taken over by the Tourism Department and converted to Tourist Bungalows. They are located at Taptapani, Barkul, Balichandrapur and Bangiriposi. Another landmark in the accommodation sector is the 49 bedded Youth Hostel at Puri, a joint venture of the Central and the State Governments.

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Tourist Transport Service—The other sector which badly needs infrastructural development is the tourist transport service. More availability of accommodation is not enough for the tourists. The tourists coming to the state will also look for suitable transport facilities for their visit to the places of tourist interest. By the end of the Fourth Five Year Plan only three centres of tourism in the state, viz. Bhubaneswar, Puri and Rambha have the facility of tourist transport service. The Fifth Five Year Plan not only witnessed strengthening of the existing units but also extension of the service to the other three centres of tourism in the state, viz., Konarka, Sambalpur and Balangir. A significant achievement during this period was the introduction of the conducted sightseeing tours in the state. It was first inaugurated at Bhubaneswar on the first day of December, 1974. This was followed by the introduction of conducted tours at Sambalpur, Balangir and Sunabeda. For the development of tourism in the state recently a masterplan is

undertaken by the State Government. In 1979 the Orissa Tourism Development Corporation was established. The aim of the corporation is to facilitate availing of institutional finance for accelerating the development of infrastructural facilities and to avoid the usual handicap of financial constraint.

Due to the establishment of tourist offices, wide publicity, accommodation facilities and good transport service, the flow of foreign tourists into this state is increasing which can be seen from the table given below :

Year		Number of foreign tourists
1974-75	..	15,153
1975-76	..	11,731
1976-77	..	17,733
1977-78	..	17,631
1978-79	..	19,638

Travel agents and guides

There are seven travel agents in the state, viz., Travel India, Bhubaneswar ; Kalinga Travels, Bhubaneswar ; Konarka Travel Services, Cuttack ; Rasika Travel, Cuttack ; Travel Wings, Bhubaneswar ; Bright Star, Bhubaneswar and Minakshi Tours and Travels, Bhubaneswar. They help the travellers intending to go abroad by sea and air. They also provide facilities to travel by train or bus to places of interest.

At religious and archaeological centres, like Puri, Bhubaneswar, Konarka and other places of the state some people act as guides. They accompany the visitors and show them the temples, historical monuments, etc., and acquaint them with their history and significance.

Post and Telegraphs

The Posts and Telegraphs services of Orissa were originally under the control of the Post Master General, Calcutta. With the formation of the province of Bihar and Orissa in 1911, a separate Postal Circle was formed for the state of Bihar and Orissa with headquarters of Post Master General at Patna in Bihar.

Even after the creation of a separate state of Orissa in the year 1936, the Posts and Telegraphs administration remained under the control of the Post Master General, Bihar and Orissa Circle, till the 20th November, 1946. Since then an independent Orissa Circle

was created under the Assistant Post Master General with headquarters at Puri. When the Circle headquarters was functioning at Puri in 1946, it was controlling only postal administration. The Telegraph and Telephone branches continued for some time to be looked after by the Post Master General, Bihar Circle. On the 12th September, 1949, Orissa became a full-fledged Posts and Telegraphs Circle under the charge of a Director. The Circle was upgraded to a major Posts and Telegraphs Circle under the charge of a Post Master General on the 3rd April, 1966.

This circle in Orissa with headquarters at Bhubaneshwar was further bifurcated into two separate circles under the charge of Post Master General, Orissa; and General Manager Telecommunication, Orissa, with effect from the 1st September, 1974 to look after the postal and telecommunication services respectively. The following postal facilities are available in the state of Orissa as on the 31st December, 1978.

Number of Postal Divisions	..	14
Number of Railway Mail Service Divisions	..	3
Number of Head Post Offices	..	28
Number of Night Post Offices	..	4
Total Number of Post Offices :		
Urban area	..	412
Rural area	..	5,993
Rural Mobile Post Offices	..	1,232
Total number of villages provided with counter service facilities		3,550
Letter boxes installed :		
Urban area	..	1,746
Rural area	..	13,280
Number of P. C. O.s	..	669
Number of combined offices	..	767
Number of Mail Motor lines	..	197
Railway lines carrying mails		14,519 km.
Mail lunch lines	..	2 km.
Mail carrier foot lines	..	1,784 km.
Average area per Post Office	..	24 km.
Average population served per Post Office	..	3,424 persons

The Telecommunications, Orissa Circle, came into being in 1974 as a result of the functional reorganisation of the erstwhile Posts and Telegraphs Circle, Orissa. The headquarters of this

organisation, i. e., the office of the General Manager, Telecommunication, Orissa, is located at Bhubaneswar. The General Manager is assisted by the Director, Telecommunication, the Assistant General Manager, the Vigilance Officer and the Chief Accounts Officer in technical, general, administrative and financial matters of the circle on telecommunication affairs. The entire circle relating to telephone and telex services is divided into five Telegraph Engineering Divisions and one Telephone Division. Each division is under the control of a Divisional Engineer. Each of these divisions is further divided into subdivisions under the control of a Subdivisional Officer, Telegraphs, Telephones. The circle covers an area of 1,55,845 square km. embracing the state of Orissa completely. The circle has provided the following facilities in Orissa as on the 31st March, 1980.

Telegraph Office

(i) No. of Departmental Telegraph Offices	..	12
(ii) No. of combined offices	..	804

Telegraph Traffic

1. No. of Telegraphs—		
(i) Inland booked	..	13,84,123
(ii) International despatch	..	6,069
(iii) International receipt	..	7,011
2. No. of messages booked on phonogram	..	1,27,850
3. No. of messages booked in telex	..	14,203

Telephone

1. No. of Local Telephone Exchange	..	171
2. No. of telephone connections	..	24,231
3. No. of equipped capacity	..	29,380
4. No. of local calls	..	6,91,73,433
5. International telephone calls —		
(i) Outgoing	..	979
(ii) Incoming	..	378
6. No. of Manual (operator controlled) Trunk calls—		
(i) Originated	..	53,93,391
(ii) Effective	..	43,53,373
7. All types of telephone extensions namely, Plan 101, 103, 104 and 105 are available.		
8. PBX and PABX can be installed		
9. STD facilities are available at Cuttack, Bhubaneswar and Rourkela.		

Telex*

1. No. of Telex Exchange	..	3
2. No. of Telex connections	..	151
3. No. of equipped capacity	—	200

Radio

There are three Radio Stations and one Auxiliary Studio in the state. These are stationed at Cuttack, Sambalpur, Jaypur and Bhubaneshwar respectively.

All India Radio, Cuttack

All India Radio Station, Cuttack, was commissioned on the 28th January, 1948 with the transmitter power of 1 kilowatt at Barabati Fort premises, Cuttack. The receiving centre for the station was also located at the same place. Then the studio facilities were set up in a rented building called Madhupur House, Mission Road, Cuttack. The Station's transmitter power was increased from one kilowatt to 20 kilowatt and this transmitter was set up on permanent basis at Fakirpara which is about 19 km. away from Cuttack city on Cuttack-Paradeep road in an area of about 33 acres. This 20 kw., transmitter was commissioned on the 25th May, 1958.

Vividh Bharati Service was commissioned at this station on the 19th August, 1962 and the 1 kilowatt transmitter was utilised for this purpose. Subsequently Vividh Bharati service came under Commercial Broadcasting service from first of May, 1975.

The receiving centre which was earlier located at Barabati Fort premises was then shifted to the permanent receiving centre at Ramkumarpur which is about 5 km. further away from the transmitter centre on the same Cuttack-Paradeep road in the year 1968. The station's transmitter power was again upgraded to 100 kw. by commissioning the 100 kw., medium wave transmitter on the 19th November, 1974 at the same transmitter centre at Fakirpara. Consequent upon this upgradation of transmitter power, from the 10 kw. transmitter was kept only as a standby transmitter.

Since the Commercial Broadcasting Service and the studio complex were respectively located in rented buildings at the Barabati Fort and the Madhupur House, Government decided to have a permanent building of their own to accommodate both the sections. Accordingly permanent Studio-cum-Administrative Building complex came up at the site 3, Cantonment Road, Cuttack. The

*FAX and courier services are also now available in the state.

Studios located in Madhupur House were shifted to this new studio centre and the same was commissioned on the 25th December, 1977. The 1 kw., transmitter of Commercial Broadcasting Service was shifted to the new permanent studio centre in the month of May 1978 and the Killa Fort premises were handed back to the State Government authorities. The administrative building at 3, Cantonment Road, premises has also been completed and the offices functioning in the Madhupur House premises were shifted in the month of November 1980.

Auxiliary Studio, Bhubaneshwar

Since the capital is situated at Bhubaneshwar, in order to facilitate recordings of the Governor, the Ministers and other V. I. Ps., one Auxiliary studio was commissioned on the 27th January, 1976 in Unit IV, Sachivalaya Marg, Bhubaneshwar. This centre has one multi-purpose studio for recording of other programmes.

All India Radio, Sambalpur

The Sambalpur station of All India Radio was commissioned on the 26th May, 1963 as an auxiliary station of the All India Radio, Cuttack under the first phase of the Medium Wave Expansion Plan of AIR during the Second Five Year plan. Initially, this station broadcast prerecorded programmes prepared by Cuttack station which could not serve the north and the north-west parts of Orissa effectively. A 20 kilowatt transmitter installed at Maneswar, 10 km. east of Sambalpur, with a receiving centre at Bhatra 6 km. east of Sambalpur now serve the purpose. A permanent Administrative Office building with a Type I Studio has been completed.

All India Radio, Jaypur

All India Radio, Jaypur, started functioning on the 28th June, 1964. This station was established mostly to serve the vast tribal population of the area in the process of their development. It is also designed to provide independent service to the region with distinct cultural pattern, agricultural practices, climatic condition and vegetation compared to the rest of Orissa.

At the beginning, the station was an auxiliary station to All India Radio, Cuttack, providing only one transmission in the evening. Later in June, 1975 three transmissions were started and the station began producing 90 minute-programme daily.

With the completion of the required studio facilities in 1980, the station is in a position to function as a full-fledged independent station.

Television

Since April 30, 1978 1 kw., T. V. Transmitter at Sambalpur and from August, 1974 a Base Production Centre at Cuttack are working. Programmes for this T. V. Relay Centre at Sambalpur are produced at the Base Production Centre, now called Upagraha Doordarshan Kendra located at Tulsipur, Cuttack, and telecast from Sambalpur.

During the Sixth Plan period a 10 kw. T. V. Transmitter was set up at Cuttack and started functioning from 10th March, 1985. Besides this, low power T. V. transmitters are also functioning at Brahmapur, Rourkela and Koraput. Television programmes are now being telecast from Delhi *via* satellite.

Wireless

The Orissa Police Wireless Grid was established in 1946 with a few number of long distance High Frequency mode of communication in the coastal districts of Orissa. Over the past 3 decades the organisation has grown to a well-knit network functioning in 3 tier system, (i) from police-stations to subdivisional headquarters. Very High Frequency mode of communication has been provided, (ii) from subdivisional and district headquarters the traffic are being cleared over High frequency terminals converging both at range headquarters and police headquarters and (iii) the third channel is teleprinter which connects all the ranges and a few districts with police headquarters and the state capital.

Out of 330 police-stations Very High Frequency (V. H. F.) has been installed at 274 police-stations. Of the remaining stations installations of V. H. F. in 20 police-stations would not normally be feasible due to topographical reasons. To facilitate inter-district trunk route V. H. F. communication, Hill top repeater (automatic) stations are functioning at Meghasani (Mayurbhanj) and Kiriburu (Kendujhar), serving as district repeater stations for Baleshwar, Mayurbhanj and Kendujhar. This provides facility for trunk route communication from police headquarters with S. Ps., Baleshwar, Mayurbhanj, Kendujhar and Rourkela.

Out of 56 subdivisions, High Frequency (H. F.) stations have been installed in 52 subdivisions, the remaining 4 being Athagarh, Banki, Nilagiri and Redhakhol. Under cyclone mitigation scheme 7 H. F. stations are not functioning in the police-stations along the coastal belt.

All the range headquarters, Baleshwar, Dhenkanal, Kendujhar and Koraput are connected through Teleprinter to Signal Headquarters. The Signal Headquarters is connected to police headquarters by Teleprinter (T. P.) Terminal and the office of the Inspector-General of Police in turn is connected with state capital through another T. P. channel.

The police telecommunication system has been rendering efficient service at all times, besides the most useful one at the time of natural calamities like cyclone, flood and drought, helping in quick provision of relief to save human life and property.

The police wireless, though primarily used for transmission of police messages, is also used by other departments of the Government for urgent communications in public interest. The state police maintain a boomerang carrier pigeon service also by maintaining lofts in inaccessible areas of the state. Static service is also used at the time of need.

Pigeon Service

Besides the most sophisticated wireless system of communications, the Orissa police has also pigeon service in the state. The organization brought a few pigeons from the Indian Army sources in the year 1946 and introduced pigeon carrier service on an experimental basis, first in Koraput district. The results were found to be immensely satisfactory and now the Orissa police has got a network of pigeon service covering the entire state linking remote police-stations, out-posts, even where very High Frequency sets are available, as disruption in electric energy supply and failure of battery charging system make the sets inoperative at crucial times.

The Orissa Police used "Homer" pigeons for a static and boomerang services. Static service provides one way communication only. In boomerang service, the pigeon performs a two-way communication. At all the district headquarters establishment and in many of the subdivisions pigeon centres are in existence for maintaining communication with remote and inaccessible

places where other means of contact either do not exist or are not adequate. There are 35 pigeon centres in the state with a total number of 948 pigeons (1985). A list of district headquarters, establishment lofts and sub-lofts are given below.

Sl. No.	District/ Establishment	District Headquarters lofts	Sub-lofts
(1)	(2)	(3)	(4)
1	Cuttack	.. Cuttack	.. Kendraparha
2	Puri	.. Puri	.. ..
3	Baleshwar	.. Baleshwar	.. Chandbali, Basta
4	Mayurbhanj	.. Baripada	.. Rairangpur, Karanjia
5	Ganjam	.. Chhatrapur	.. Paralakhemundi, Bhanjanagar, R. Udayagiri
6	Koraput	.. Koraput	.. Gunupur, Lakshmipu
7	Kalahandi	.. Bhawanipatna	.. Kutur, Khariāl
8	Phulabani	.. Phulabani	.. Baligurha
9	Sambalpur	.. Sambalpur	.. Padmapur
10	Balangir	.. Balangir	.. Sonapur Kantabanji
11	Sundargarh	.. Sundargarh	.. Banei
12	Dhenkanal	.. Dhenkanal	.. Kamakhyanagar
13	Kendujhar	.. Kendujhar	.. Telkoi
14	Anugul	.. Police Training College, Anugul	..
15	Signals Headquarters, Cuttack	Central Breeding Cuttack	Mobile Pigeon Loft,

The services of the pigeons are utilised both in normal and abnormal situations. For smooth running of normal work boomerang system is followed. This is a two way system of service in which pigeons carry and come back daily with messages of law and order situation, etc. As such, regular intelligences are being exchanged from district headquarters to police-stations and out-posts and vice versa.

In ordinary and extraordinary situations, i. e., flood, cyclone, drought and other natural calamities the pigeons are pressed into service to bring back messages from affected areas. The services of the pigeons are also utilised during general elections to keep contact with distant polling booths. In the past the pigeons of the Orissa police were also very advantageously used in locust infestations.

Orissa is the only state in India which has this unique and novel system of communication. This has attracted the attention of many police officers and army personnel to Orissa. Training in pigeon service is also imparted to police officers coming from outside the state.

In 1954, Orissa police pigeons had shown a demonstration in exchange of messages to the Late President Dr. Rajendra Prasad, late Prime Minister Pandit Jawaharlal Nehru and other dignitaries at New Delhi during the postal centenary. This was highly appreciated by all.

The pigeon service is often preferred because it takes less time than wireless transmission. During the first general election voters in man-eater areas of Langigarh in Kalahandi district were alerted through pigeon messages regarding depredation of the tigers. From economic point of view pigeon service is cheaper as pigeon maintenance is very cheap in comparison to other machanical devices. There is no question of change of parts, overhauling, etc. The loss of birds is very insignificant. The active life of a 'Homer pigeon' is from 7 to 10 years. Pigeon messages are also foolproof and secured with proper signature of the sender.

Organisations of owners and employees in the field of transport and communications

Out of 598 trade unions in the state there are 69 in the field of transport and communications. They are registered

organisations and carry on trade union activities in the state for the benefit of the workers. District-wise figures are given below as on 31st December, 1979.*

Name of the district	Total no. of trade unions	No. of trade unions in the field of transport and communications
(1)	(2)	(3)
Balangir ..	5	1
Baleshwar ..	42	6
Phulabani ..	2	1
Cuttack ..	160	16
Dhenkanal ..	45	2
Ganjam ..	52	11
Kalahandi ..	1	1
Kendujhar ..	26	3
Koraput ..	31	5
Mayurbhanj ..	11	2
Puri ..	114	18
Sambalpur ..	51	2
Sundargarh ..	58	1
Total ..	598	69

*Labour Commissioner, Orissa, Bhubaneswar.

APPENDIX I

Statement of State Highways with length in Kilometres and the places through which it passes

Sl. No. (1)	State Highway (2)	Total Kilometres (3)	Length in Kilometres in the district (4)	Name of the road covered by the State Highway (5)
1	SH-1	362.53	Puri 133.00 Phulabani 179.63 Kalahandi 49.90 Total 362.53	NH-5 Junction-Khorda-Nayagarh-Dasapalla-Madhapur - Phulabani - Bispada - Phiringia - Nuagan-Baligurha-Tumudibandha - Rampur-Amat on SH-2
2	SH-2	320.80	Sambalpur 30.00 Balangir 101.00 Kalahandi 130.60 Koraput 59.20 Total 320.80	NH-6 Junction-Barpali-Dunguripali-Balangir-Saintala- Amat- Kesinga- Bhawanipatna - Junction of SH-6-Motu-Papadahandi-Boriguma-Junction of NH-43
3	SH-3	252.40	Sambalpur 101.00 Kalahandi 94.40 Balangir 57.00 Total 252.40	Junction of SH-2-Amat-Titilagarh-Bangomunda-Kharial- Nuapada-Padmapur-Sohela-Junction of NH-6
4	SH-4	247.63	Koraput 187.02 Ganjam 60.61 Total 247.63	Junction of NH-43-Koraput- SH-4-Lakshmipur-Rayagarha- Kontalpeta-Junction of SH-5-Bhangi Junction - Gunupur- Varanathi-Paralakhemundi-Mandasa

APPENDIX I—(Contd.)

Sl. No.	State Highway	Total Kilometres	Length in Kilometres in the district	Name of the road covered by the State Highway
(1)	(2)	(3)	(4)	(5)
5	SH-5	106.84	Koraput 67.62 Phulabani 39.22 Total 106.84	Junction of SH-4 Konetelpeta- Junction of SH - 6 - Muniguda - Kotagarh- Tumudibandha-Junction of SH-1.
6	SH-6	67.39	Kalahandi 37.20 Koraput 30.19 Total 67.39	Junction of SH-2 Bhawanipatna-Chatikuda- Sikarkuda-Ambadala-Muniguda-Junction of SH-5.
7	SH-6A	38.62	Kalahandi 38.62	Junction of SH-6 Chatikuda- Narla-Rampur
8	SH-7	154.88	Ganjam 105.00 Phulabani 49.88 Total 154.88	Junction of NH-5 Brahmapur-SH-7 Hinjili-Asika- Bhanjanagar-Kalinga-Bisipada-Junction of SH-1.
9	SH-7A	57.73	Phulabani 57.73	Junction of SH-7 Kalinga-G.Udayagiri-Raikia- Nuagan-Junction of SH-1

APPENDIX I—(Contd.)

Sl. No.	State Highway	Total Kilometres	Length in Kilometres in the district	Name of the road covered by the State Highway
(1)	(2)	(3)	(4)	(5)
10	SH-8	58.20	Puri	NH-5 Bhubaneshwar-Saradeipur-Pipili-Puri.
11	SH-9	50.30	Baleswar	Junction of N.H-5 Bhadrak-Chandbali.
12	SH-10	250.70	Sambalpur Sundargarh Kendujhar	Junction of N.H-6 Sambalpur-Jharsuguda-Sundargarh Panposh-Rajmunda-Lahunipada-Koira-Bhadrāsahi Junction of SH-10A Barbil
			Total	250.70
13	SH-10A	47.20	Sambalpur Sundargarh	Junction of SH.10 Lahunipada-Jangira-Barkote-Junc- tion of SH-6
			Total	47.20
14	SH 10B	28.20	Kendujhar	Junction of SH-10 Bhadrāsahi-Remuli-Junction of SH-11.
15	SH-11	175.20	Cuttack Kendujhar	Junction of NH-5 Panikoli-Anandapur-Kendujhar- Remuli- Champua-Bihar border
			Total	175.20

APPENDIX I (Contd.)

Sl. No.	State Highway	Total Kilometres	Length in Kilometres in the district	Name of the road covered by the State Highway
(1)	(2)	(3)	(4)	(5)
16	SH-12	82'00	Cuttack	NH.5-Cuttack-Kandarpur-Kujang-Paradeep road
17	SH-13	65'65	Puri	NH.5-Khorda-Jatni-Pipili-Nimaparha-Konarka road
18	SH-14	152'18	Phulabani Balangir	SH.1-Madhapur-Sonapur-Balangir- SH.2 road
			Total	152'18
19	SH-15	81'40	Sambalpur Balangir	NH.6 Junction Kalapara-NH.42-Junction Maneswar- Dhasra-Birmaharajpur-Sonapur road
			Total	81'40
20	SH-16	70'34	Kalahandi	Junction of SH.2-Bhawanipatna-Kharial road SH.3
21	SH-17	151'07	Ganjam Koraput	SH.7 Brahmapur-Digapahandi-Luhagudi-Mohana- Adeva-Raipanga-Bhangi-Junction of SH.4
			Total	151'07

APPENDIX II**List of Aerodromes, Airstrips and Helipads in Orissa**

Sl. No.	Name	District	Managed by
(1)	(2)	(3)	(4)
Aerodromes			
1	Bhubaneshwar	Puri ..	Government of India
2	Jharsuguda ..	Sambalpur ..	Ditto
3	Rourkela ..	Sundargarh ..	H. S. L.
Airstrips			
*1	Amarda Road	Baleswar ..	Government of India
2	Tusra ..	Balangir ..	Government of Orissa
3	Rangeilunda ..	Ganjam ..	Ditto
4	Utkela ..	Kalahandi ..	Ditto
5	Nuaparha ..	Ditto ..	Ditto
6	Raisuan ..	Kendujhar ..	Ditto
*7	Barbil ..	Ditto ..	Ditto
8	Jaypur ..	Koraput ..	Ditto
9	Rairangpur ..	Mayurbhanj	Ditto
10	Hirakud ..	Sambalpur ..	Ditto
11	Padmapur ..	Ditto ..	Ditto
*12	Sar Lake ..	Puri ..	Ditto
*13	Konarka ..	Ditto ..	Ditto
*14	Kandaparha ..	Ditto ..	Ditto

*Airstrips not in serviceable condition

APPENDIX II—(Contd.)**List of Aerodromes, Airstrips and Helipads in Orissa**

Sl. No.	Name	District	Managed by
(1)	(2)	(3)	(4)
15	Birasal ..	Dhenkanal ..	Government of Orissa
16	Gudari ..	Phulabani ..	Ditto
17	J. K. Pur ..	Koraput ..	J. K. Paper Mill
18	Rajabasa ..	Mayurbhanj ..	Maharaja of Mayurbhanj ex-state
19	Therubali ..	Koraput ..	Indian Metal and Ferro Alloy Ltd.
Helipads:			
1	Solapur (Kushpur) ..	Puri	
2	Kakatpur (Balara) ..	Ditto	
3	Athaidra (Nagar) ..	Ditto	
4	Astarang (Timar) ..	Ditto	
5	Ankoi (Puri Division) ..	Ditto	
6	Bhabakundaleswar (Krushnaprasad) ..	Ditto	
7	Nuapada (Chilka) ..	Ditto	
8	Krushnaprasad (Puri Division) ..	Ditto	
9	Adal Badala (Kanasa) ..	Ditto	
10	Bramhagiri (Rebana Nuagan) ..	Ditto	
11	Chhamundia (Khorda Division) ..	Ditto	
12	Baulanga (Jagatsinghapur) ..	Cuttack	
13	Hatigarh (Raibania) ..	Baleshwar	
14	Dhusuri ..	Ditto	
15	Panpur (Basudebpur) ..	Ditto	
16	Ghanteswar (Haldia) ..	Ditto	

CHAPTER V

ECONOMIC TRENDS

The Participation Rate

According to 1981 Census the working population formed 32.82 per cent of the total population and the balance 67.18 per cent depended on the former for their livelihood. This shows higher dependent ratio for the state largely accounting for a very low standard of living. The participation rates of 1901, 1961 and 1971 were 31.37 per cent, 43.66 per cent and 31.22 per cent respectively. However, it is difficult to compare with general participation rate in the inter-censal period because of frequent changes of the definition of workers.

Among the workers male participation is always higher than female participation rate. In 1971 Census, the male and female participation rates were 55.32 per cent and 6.81 per cent respectively. Male and female participants account for 54.38 per cent and 10.88 per cent of the respective totals for 1981. The combined participation rate (main and marginal workers taken together) of Orissa has been recorded at 38.06 per cent in 1981 as against 33.19 per cent during 1971. Of this males and females account for 56.12 and 19.68 per cent of the respective totals for 1981. However, male and female participation rates in rural areas have been recorded as 56.98 and 20.94 per cent respectively as against the corresponding figures of 56.11 and 10.72 per cent for 1971. Urban participation rates for 1981 for males and females have been 49.35 and 7.70 per cent respectively as against 50.63 and 6.56 per cent for 1971.

This indicates that rural participation rate for both male and female is always higher than the urban participation rate. The details of the trends of the participation rate both for the male and the female are furnished in Table 1.

TABLE 1

General participation rates in Orissa in 1981 Census compared with the corresponding rates in earlier Census, main workers only

Census		Proportion of workers to total population	Proportion of non- workers to total population	Male workers	Female workers
(1)		(2)	(3)	(4)	(5)
1901	..	36.37	63.63	58.63	14.86
1911	..	43.33	56.67	60.87	26.71
1921	..	46.11	53.89	62.93	30.61

Census		Proportion of workers to total population	Proportion of non- workers to total population	Male workers	Female workers
(1)		(2)	(3)	(4)	(5)
1931	..	45.71	54.29	54.92	32.40
1951	..	37.36	62.64	56.33	18.79
1961	..	43.66	56.34	60.75	26.58
1971	..	31.22	68.78	55.32	6.81
1981	..	32.82	67.18	54.38	10.88

Derived from Census of India, 1961, volume XII, Orissa, part—IA (II), General Report 1965, p. 443; and A portrait of population, Orissa, Census of India, 1971, p. 337 and Census of India, 1981.

Occupational Pattern

The occupational pattern of a population shows the anatomy of the economy from the standpoint of peoples' participation for earning their livelihood. It shows the nature and structure of the economy. The Table 2 shows the occupational structure of the population of Orissa. Workers engaged in cultivation as agricultural labourers constituted 51.86 per cent in 1901. This increased to 70.36 per cent in 1951 and 73.83 per cent in 1961. According to 1971 Census, the corresponding figure reached as high as 77.44 per cent. Workers engaged in manufacturing activities which was 12.90 per cent in 1901 Census, decreased to 7.68 per cent in 1951 Census. In 1961 and 1971 Censuses, the corresponding proportion of such workers was 8.05 per cent and 5.05 per cent respectively. The proportion of workers engaged in the last four categories of workers (i. e., construction; trade and commerce; transport, storage and communications; and other services shows a declining trend. The percentage of workers of all these categories taken together declined from 25.99 per cent in 1901 Census to 19.46 per cent, 16.04 per cent and 13.73 per cent respectively in 1951, 1961 and 1971 Censuses. Among the workers engaged in these four categories the percentage of workers engaged in transport, storage and communications has shown an increasing trend from 1951 Census onwards.

The trend in the occupational pattern of population of the district during the inter-censal period does not indicate any significant change. Agricultural sector is still overcrowded and there appears to be little prospects of reducing the pressure of dependence on this sector in the immediate future due to lack of rapid industrial development and higher rate of population increase.

Number of workers in different industrial categories of 1971 compared with the corresponding categories in earlier census is given in Table 2.

The occupational structure of population according to 1981 Census is given in Table 3 which does not show any significant departure from the occupational structure in 1971.

TABLE 2
Number of workers in different industrial categories of 1971 compared with the corresponding categories in earlier Census

Category of workers	1971	1961	1951	1941
(1)	(2)	(3)	(4)	(5)
I. Cultivators ..	3,368,025 (49.16)	4,353,012 (56.82)	2,839,502 (51.90)	..
II. Agricultural Labourers ..	1,937,574 (28.28)	1,303,511 (17.01)	1,009,988 (18.46)	..
III. Livestock, Forestry, Fishery, Plantation, Orchards and allied activities	146,923 (2.14)	131,996 (1.72)	136,847 (2.50)	..
IV. Mining and Quarrying ..	51,701 (0.76)			..
V. (a) Manufacturing, Processing, Servicing and repairs at household industries	248,610 (3.63)	530,809 (6.92)	420,125 (7.68)	..
(b) Manufacturing, Processing, Servicing and repairs other than household industries	157,344 (2.30)	86,197 (1.13)		
VI. Construction ..	37,801 (0.55)	30,858 (0.40)	48,525 (0.89)	..
VII. Trade and Commerce ..	226,754 (3.31)	147,462 (1.93)	240,914 (4.40)	..
VIII. Transport, Storage and Communi- cations	98,994 (1.45)	51,716 (0.68)	35,785 (0.65)	..
IX. Other Services ..	5,76,925 (8.42)	1,025,986 (13.39)	739,493 (13.52)	..
Total workers ..	6,850,651 (100)	7,661,529 (100)	5,471,179 (100)	..

Category of workers (1)	1931 (6)	1921 (7)	1911 (8)	1901 (9)
I, Cultivators ..	2,125,870 (37·23)	2,501,561 (48·62)	2,346,980 (47·60)	1,857,863 (49·59)
II. Agricultural Labourers ..	1,496,841 (26·22)	1,029,308 (20·00)	1,065,259 (21·61)	234,863 (6·27)
III. Livestock, Forestry, Fishery, Plantation, Orchards and allied activities	271,379, (4·75)	272,649 (5·30)	243,949 (4·95)	196,583 (5·25)
IV. Mining and Quarrying				
V. (a) Manufacturing, Pro- cessing, Servicing and repairs, at house- hold industries				
(b) Manufacturing, Pro- cessing, Servicing and repairs other than Household Industries	455,132 (7·97)	552,891 (10·75)	519,865 (10·54)	483,204 (12·90)
VI. Construction ..	28,405 (0·50)	32,898 (0·64)	20,734 (0·42)	15,963 (0·42)
VII. Trade and Commerce ..	251,745 (4·41)	314,537 (6·11)	299,318 (6·07)	218,809 (5·84)
VIII. Transport, Storage and Communications	16,535 (0·29)	23,452 (0·46)	26,894 (0·54)	20,758 (0·55)
IX. Other Services	1,063,766 (18·63)	417,728 (8·12)	407,572 (8·27)	718,699 (19·18)
..	5,609,673 (100)	5,145,023 (100)	4,930,571 (100)	3,746,742 (100)

Columns 2 and 3 worked out from 'A Portrait of Population', Orissa, Census of India, 1971, p. 337.

Columns 4 to 9 worked out from Census of India, 1961, vol. XII—Orissa Part I-a & II, General Report—1965, p. 443.

TABLE 3

Proportion of workers in different occupational groups according to 1981 Census.

Persons/Male/Female		Total workers	Agricultural labourers	Household labourers	Others
Person 100	..	47.00	27.65	3.47	21.88
Males 100	..	51.38	22.59	2.97	23.06
Females 100	..	24.68	53.42	6.02	15.88

Source : Census 1981

Employment Situation

Full employment is one of the basic socio-economic objectives of the state. The level of employment determines the level of living welfare and also the economic progress of the state. However, it is difficult to have a reliable estimate of the employment situation in the state, in view of the paucity of data.

The Steering Committee set up by the Government of Orissa in 1968 estimated that the back-log of unemployment at the end of the First Plan was 1.64 lakhs and the expected new entrants during the Second Plan was 3.26 lakhs. Out of this total job requirements of 4.90 lakhs, the Second Plan generated employment opportunities to the tune of 1.83 lakhs leaving a back-log of unemployment at 3.07 lakhs at the beginning of the Third Plan. Taking into account 6.61 lakh new entrants, the job requirements during the Third Plan was 9.66 lakhs. As the job opportunities created during the Third Plan was of the order of 5.22 lakhs, the back-log of unemployment towards the year 1966-67 was about 4.44 lakhs. During the Three Annual Plans about 3.90 lakh job opportunities were created and taking into consideration the new entrants to the labour force during these three years, the back-log unemployment at the commencement of the Fourth Plan was estimated to be 4.93 lakhs. The possible number of new entrants to the labour force during the 4th Plan was estimated to be of the order of 10.31 lakhs. Thus the total job opportunities required during the Fourth Plan was placed at 15.23 lakhs.¹

Another estimate prepared by the Bureau of Statistics and Economics, Orissa, in 1971 put the number of unemployed persons in the state at 31.0 lakhs in 1971 and at 37.2 lakhs at the end of the Fourth

1. The Steering Committee, Government of Orissa, *The Economic Base of Orissa for the Fourth Five Year Plan*, Orissa Government Press, 1968

Plan period. But according to the estimate in the 'Economic Base of Orissa for the Fifth Plan', the level of unemployment was 28 lakhs at the end of the Fourth Plan period.

On the basis of the estimate made by the Bureau of Statistics and Economics, Government of Orissa, and the State Planning Department, the Fifth Five Year Plan (Draft) of Orissa has placed the back-log of unemployment at about 29.7 lakhs at the end of the Fourth Plan and 39.40 lakhs at the end of the Fifth Plan period.¹

In view of the divergent estimates arrived at by different approaches, recently another employment estimate has been made for the rural areas on the basis of requirements of man-power per hectare of cultivation of different crops. This gives an estimate of 26.6 lakhs man-year surplus in rural areas by 1973-74. Taking into account the fact that 30 per cent of the female population do not offer themselves for work, it is estimated that there were 18.6 lakh unemployed persons in the rural areas in the year 1973-74. This together with the number of persons in the urban area as per Employment Exchange Live Register of 3.4 lakhs, comes to 22 lakhs unemployed by 1973-74. With an estimated annual addition to labour force of 1.90 lakhs, the total size of unemployment in terms of man-years was put at 29.6 lakhs by the end of 1977-78. Taking into account the probable employment of 5.5 lakhs created during the Fifth Plan Period, the back-log of employment by the end of 1977-78 was approximately 24.1 lakhs.² Since Orissa had approximately 24.1 lakh unemployed persons by the end of 1977-78 and that there is an annual addition of 1.9 lakh persons to the labour force, the total job opportunities required by the end of 1979-80 would be of the order of 27.9 lakhs. The employment created during 1978-79 and 1979-80 was of the order of 5.3 lakhs. Thus, the state is left with a back-log of unemployed persons numbering 22.6 lakhs on the eve of the Sixth Five-Year Plan. The addition to labour force during the Sixth Plan itself being of the order of 9.5 lakhs, employment opportunities were required to be created during the plan period for an aggregate of 32.1 lakh persons. During the Sixth Plan, employment avenues were provided to 17.6 lakh persons. Thus, the state is left with a back-log of unemployed persons numbering 14.5 lakhs on the eve of the Seventh Five-Year Plan period.³

1. Planning and Co-ordination Department, Government of Orissa, Fifth Five Year Plan of Orissa (Draft)—Orissa Government Press, 1973, p. 105.

2. Bureau of Statistics and Economics, Orissa: Economic Survey of Orissa, 1977—Orissa Government Press, 1976, pp. 69-66.

3. Basic plan Statistics, Planning and Co-ordination Department, 1985, p. 29.

Urban Unemployment

As regards urban unemployment, the Employment Exchange data continue to be the only regular source of information. But there are limitation in the data in as much as many of the persons continuing on the live-register are either already employed or seeking better employment opportunities. However, these data do indicate broad trends to urban unemployment.

Table 4, given below indicates the number of applicants on the live-register and the number of placements during the period 1956-83.

TABLE 4

Number of applicants on the live-register and number of placements during 1956—83

Periods	No. of Exchanges	Applicants on the live-register	Total No. of placements	Percentage of column 4 to column 3
(1)	(2)	(3)	(4)	(5)
1956 ..	3	9,593	3,777	39.37
1961 ..	13	70,370	18,198	25.85
1966 ..	15	86,826	18,452	21.25
1971 ..	16	1,88,280	15,169	8.06
1972 ..	16	2,34,587	14,604	5.99
1973 ..	39	3,36,005	15,003	4.47
1974 ..	47	3,37,091	14,308	4.24
1975 ..	48	3,52,110	19,450	5.52
1976 ..	63	3,56,217	12,420	6.01
1977 ..	63	3,58,690	14,487	4.03
1978 ..	63	3,83,267	15,760	4.11
1979 ..	74	4,32,158	12,809	5.04
1980 ..	78	4,47,171	16,830	3.76
1981 ..	78	4,94,832	17,840	3.60
1982 ..	78	4,78,725	16,081	3.35
1983 ..	78	5,36,145	12,559	3.34

Source: Economic Survey of Orissa, 1977, Bureau of Statistics and Economics, Orissa, 1979, p. 67 and Statistical Abstract of Orissa, 1981.

Table 4, shows that the number of applicants on the live-register of Employment Exchanges during the last 18 years (i. e. from 1956—1983) has increased by about 55 times where as the percentage of placements to the applicants on the live-register has fallen from 39.37 per cent to 21.34 per cent. The number of placements also indicates a declining trend from the year 1961 excepting the years 1975, 1976 and 1979 when there was a substantial increase in the number of placements. Thus, it reveals that the demand for employment opportunities has been lagging behind the increasing supply of labour due to a variety of reasons like growth of population, growth in the literacy rate and craze for white collar jobs in the absence of other avenues of self-employment.

Table 5 below shows the number of registrations and vacancies during the period from 1956 to 1982.

TABLE 5
Registration and vacancies notified (as on 31st December 1977)

Year	Registration	Vacancies Notified	Percentage of vacancies to the registration
(1)	(2)	(3)	(4)
1956 ..	32,701	8,180	25.0
1961 ..	1,25,793	39,356	31.3
1966 ..	1,67,148	34,300	20.5
1967 ..	1,58,333	23,881	15.1
1968 ...	1,40,236	21,379	15.2
1969 ...	1,49,316	21,520	14.1
1970 ...	1,51,454	24,528	16.2

Year	Registration	Vacancies Notified	Percentage of vacancies to the registration
(1)	(2)	(3)	(4)
1971 ..	1,95,912	26,940	13.8
1972 ..	2,07,287	28,363	13.7
1973 ..	2,45,758	35,703	14.5
1974 ..	2,09,585	32,812	14.5
1975 ..	2,02,822	35,732	17.6
1976 ..	2,11,809	31,423	14.8
1977 ..	1,85,288	27,457	15.4
1978 ..	2,05,246	33,369	16.3
1979 ..	2,38,575	37,763	15.8
1980 ..	2,26,257	28,559	12.6
1981 ..	2,27,939	29,507	12.9
1982 ..	2,05,221	24,102	11.7

Sources : Fact Book on Man Power, Bureau of Statistics and Economics, Orissa, 1977, p. 57.

Economic Survey of Orissa, Bureau of Statistics and Economics, Orissa, 1979, p. 68.

Economic Survey of Orissa, Bureau of Statistics and Economics, Orissa, 1983-84. p. 97.

Table 5 indicates that there has been a steady upward trend in the number of registrations, excepting for the period from 1967—70 and 1977. On the contrary the rate at which employment opportunities expanded, remained much behind the pace at which requirements in terms of employment increased during the period. The number of vacancies which initially indicated an increasing trend remained more or less static after the year 1967. In fact, the percentage of vacancies to the number of registration declined from 31.3 per cent in 1961 to 11.7 per cent in 1982.

TABLE 6

The following table shows the occupational distribution of applicants in the live-registers of the Employment Exchanges in the state

Occupation (1)	No. of applicants on live-registers as on 31st December		
	1961 (2)	1966 (3)	1971 (4)
Professional, Technical and related workers	2,817 (3.66)	2,618 (3.02)	7,730 (4.10)
Administrative, executive and related workers	278 (0.36)	100 (0.11)	116 (0.06)
Clerical and related workers	2,033 (2.64)	1,419 (1.63)	3,517 (1.86)
Sales workers	67 (0.09)	7 (0.01)	N. A
Agricultural, dairy and related workers	650 (0.84)	241 (0.28)	302 (0.16)
Miners, Quarrymen and related workers	124 (0.16)	113 (0.13)	46 (0.02)
Workers in Transport and Communication	1,687 (2.19)	2,424 (2.79)	2,332 (1.24)
Craftsmen, production process workers and labourers with work experience not elsewhere classified	22,095 (28.68)	22,081 (24.28)	39,765 (21.08)
Persons without professional and vocational training or previous work experience	41,905 (54.39)	54,070 (62.28)	1,30,898 (69.38)
Service workers	5,390 (6.99)	4,753 (5.47)	3,961 (2.10)
Total	77,046 (100)	87,826 (100)	1,88,667 (100)

(Continued)

Occupation	No. of applicants on live-registers as on 31st December			
	1974	1975	1976	1979
(1)	(5)	(6)	(7)	(8)
Professional, Technical and related workers	6,909	7,968	15,794 (4.43)	18,749 (4.338)
Administrative, executive and related workers	387	1,405	628 (0.18)	469 (0.108)
Clerical and related workers	6,898	4,237	12,680 (3.56)	15,326 (3.547)
Sales workers	2,516	2,957	686 (0.19)	17 (0.003)
Agricultural dairy and related workers	198	237	440 (0.12)	2,116 (0.490)
Miners, Quarrymen and related workers	129	6,194	59,141 (16.60)	62,025 (14.352)
Workers in Transport and Communication	3,980	1,331		
Craftsmen, production process workers and labourers with work experience not elsewhere classified	79,223	47,232		
Persons without professional and vocational training or previous work experience	2,00,901	2,08,839	2,60,390 (73.10)	3,25,527 (75.36)
Service workers	35,950	57,560	6,458 (1.82)	7,928 (1.835)
Total	3,37,091	3,35,960	3,56,217 (100)	4,32,157 (100)

Sources: Economic Survey of Orissa, 1977, Bureau of Statistics and Economics, Orissa, 1979, p. 69.

The Economic Base of Orissa for the Sixth Plan, p. 15.
(Figures in brackets indicate the percentages)

The table 6 shows that out of 4.32 lakh persons on the live-register at the end of 1979, as much as 75.32 per cent were without any professional and vocational training or previous work experience and 4.33 per cent were professional, technical and related workers. In both these categories of occupation it is noted that there is an increase in their number as well as in their percentage in between the years 1961 and 1979. But the rate of increase in respect of persons without any professional or vocational training or previous work experience has been higher (i.e., increased from 54.39 per cent in 1961 to 75.32 per cent in 1979) than in respect of professional technical and related workers (which increased from 3.66 per cent in 1961 to 4.33 per cent in 1979). It indicates that the problems of unemployment among technical and professional persons is not as serious as any of the people who are without any sort of training or work experience. It may not be unreasonable to assume that bulk of the technically or professionally trained registrants might be in the register for better employment opportunities. Similar is the case with the service workers (whose percentage actually declined from 6.99 per cent in 1961 to 1.83 per cent in 1979) and minors, quarrymen, workers in transport and communication, craftsmen, production process workers and labourer with work experience not elsewhere classified (whose percentage declined from 31.03 per cent in 1961 to 14.35 per cent in 1979). In contrast, persons who have no professional or vocational training or previous work experience and those who belong to clerical and related workers categories are unemployed at higher rates in comparison to others.

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Table 7 deals with the educated unemployed with matriculation and above educational standard. The educated unemployed in the state constitutes 2.45 per cent of the total applicants on the live-register. The table shows that the total number of educated unemployed has increased by 93 times between the period from 1956 to 1980. The extent of educated unemployed which was only 1964 in 1956 increased to 13,587 in 1971 and 1,82,577 in 1980. Out of the total educated unemployed in 1980, 56.87 per cent were matriculates, 13.35 per cent intermediates and below graduates, 28.31 per cent graduates and 1.47 per cent post-graduates.

Considering the rate of increase of the educated unemployed, the rate of increase of employment opportunities in the public sector of Orissa has been very slow. The number of persons employed in the public sector increased from 1.04 lakhs on the 31st March, 1956

to 4.52 lakhs by the 31st March, 1980. In contrast, the number of the educated unemployed increased from 0.01 lakhs in 1956 to 1.82 lakhs in 1980.

TABLE 7

Number of persons with matriculation and above educational standard on Live-Register in Orissa

Period ending in June (Quarter)	Matriculate	Inter-mediate and below graduates	Graduates				Post-graduates	Grand Total
			Engin-eering Technology	Medical	Others	Total		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1956	1,445	375	..	..	144	144	..	1,964
1961	5,160	463	20	1	611	632	..	6,245
1966	11,283	865	69	9	1,361	1,439	..	13,587
1971	33,729	3,332	647	440	6,191	7,278	..	44,339
1976	87,373	16,433	380	495	27,427	28,302	2,252	1,34,360
1977	86,420	13,330	256	183	33,191	33,630	2,390	1,40,770
1978	99,558	20,724	272	479	39,832	40,583	2,505	1,63,370
1979	1,03,502	22,682	310	553	46,930	47,793	2,236	1,76,213
1980	1,03,817 (56.87)	24,371 (13.35)	291 (0.16)	453 (0.25)	50,957 (27.90)	51,701 (28.31)	2,688 (1.47)	1,82,577

Sources: (1) Fact Book on Man-power, Bureau of Statistics and Economics, Orissa, 1977, p. 63.
 (2) Economic Survey of Orissa, 1977, Bureau of Statistics and Economics, Orissa, 1977, p. 70.
 (3) The Economic Base of Orissa for the Sixth Plan, p. 16.

State Income and its Growth

In spite of the inadequacies from which the national and the state income data suffer from, these are the most important indices of measurement of economic growth of a country. It is customary to examine the growth rates in the aggregate and *per capita* real income for making assessment of the level of economic development reached.

During the last fifteen years (1961-62 to 1975-76) the state income of Orissa increased at the annual rate of 3.8 per cent whereas the *per capita* annual income increased at the rate of 1.5 per cent. The rate of growth of the state income of Orissa has been 3 per cent in the 1st plan, 3.6 per cent in the 2nd plan, 4.6 per cent in the 3rd plan and 5.4 per cent during the three Annual plans.

The rate of growth was 2.6 per cent per annum during the fourth plan, 2.5 per cent in the fifth plan. Thus compared to earlier plans, the growth rate of state income during the fourth and fifth plans have declined. The severe inflationary pressure prevailing all over the country, which brought down the real value of investments much lower and the low levels of investment have been attributed as the main factors for this low growth rate.

In 1979-80, the state income declined due to severe state-wide drought. State income data for the past several years show that the growth of investment makes a little impact on the state's economy during a bad agricultural year. Cyclone, drought and flood visit the state almost one after another or even simultaneously and put the wheel of progress in the backward gear. In 1979-80, the state income fell down below the previous years level by 17.39 per cent. In 1980-81, there was a quick recovery and the state income registered a growth of 4.1 per cent. During 1981-82, the State income also registered a higher growth rate of 8.5 per cent over its preceding year. The gains made in the economy during 1981-82 was mainly due to the better performance of agriculture and animal husbandry sectors. The reversal trend set in 1982-83 to minus 8.3 per cent was due to repeated onslaughts of flood and drought. The national growth rate in this year was also marginal, i.e., 1.7 per cent.

The compound growth rate of the state, i.e., 2.39 per cent between 1970-71 to 1982-83, was however one of the lowest among the major states in the country.

Sectoral Growth Rate

An examination of the growth in the income originating from different sectors comprising the state economy provides further insights into the economy of Orissa. During the period from 1961-62 to 1975-76, the income originating from power, transport and other services sectors have grown slightly faster than agriculture and manufacturing sectors. In spite of this, the proportional contributions of different sectors to the net output in the state remained almost the same during this period. Agriculture and allied sector contributed as much as 64.4 per cent of the total net domestic product at factor cost during the year 1976-77. Among the different sectors the compound growth rate in the agriculture sector was 3.8 per cent, manufacturing 2.9 per cent, transport 4.4 per cent and services 4.2 per cent as against 2.1 per cent, 4.2 per cent, 5.2 per cent and 4.4 per cent for all-India corresponding sectors during the period 1961-62 to 1975-76.

The state income in different sectors in the state for 1977-78 to 1982-83 is given below to highlight the importance of different sectors in the state economy.¹

TABLE 8

Sectoral distribution of state income at constant (1970-71) prices
(Figures in brackets indicate percentage)

(in crores of rupees)				
Sl No.	Sectors	1970-71	1977-78	1978-79
(1)	(2)	(3)	(4)	(5)
1	Agriculture and Allied	679 (65.5)	787 (63.2)	834 (62.8)
2	Mining, Manufacturing and small enterprises	127 (12.2)	169 (13.6)	190 (14.3)
3	Commerce, Transport and Communication	115 (11.1)	139 (11.2)	146 (11.0)
4	Other Services	116 (11.2)	150 (12.0)	168 (11.9)
5	Total State Income	1,037 (100.0)	1,245 (100.0)	1,328 (100.0)

(in crores of rupees)					
Sl. No.	Sectors	1979-80 (P)	1980-81 (P)	1981-82 (P)	1982-83 (Q)
(1)	(2)	(6)	(7)	(8)	(9)
1	Agriculture and Allied	614 (56.0)	876 (63.3)	970 (64.6)	815 (59.2)
2	Mining, Manufacturing and small enterprises	198 (18.0)	186 (13.5)	192 (12.8)	213 (15.5)
3	Commerce, Transport and Communication	122 (11.2)	151 (10.9)	163 (10.9)	161 (11.7)
4	Other Services	163 (14.8)	170 (12.3)	175 (11.7)	187 (13.6)
5	Total State Income	1,097 (100.0)	1,383 (100.0)	1,500 (100.0)	1,376 (100.0)

(P) Provisional

(Q) Quick

1. Economic Survey of Orissa, 1983-84, Bureau of Statistics and Economics, Orissa, Bhubaneshwar, p. 16.

The table 8 shows that contribution of all sectors to the state income has remained, more or less, constant over years. And state income data from 1970-71 to 1980-81 reveals that the compound growth rate for all sectors was 2.9 per cent as against the all-India average of 3.5 per cent. The gap was wider in case of commerce, transport and communication sector and other services sector which shows that there was greater diversification of economic activities in other parts of India than Orissa.

The following figures show the sectoral growth in state income vice a vice national income in percentage from 1970-71 to 1980-81.

Sl. No.	Sector	Orissa	India
1	Agriculture and allied	2.0	1.8
2	Mining, manufacturing and small enterprise.	5.5	4.5
3	Commerce, transport and communication.	2.5	5.4
4	Other services	4.1	5.4
5	All sectors	2.9	3.5

Growth rate and Disparity between *per capita* income of Orissa and India.

The growth rate in *per capita* income at constant prices of 1970-71 has been still worse. The *per capita* income estimates for Orissa indicates that it has grown by 0.9 per cent in the First plan, (—)1.01 per cent in the Second Plan, 2.0 per cent in the Third Plan, 2.0 per cent during the Fourth Plan and 1.0 per cent in Fifth Plan. Thus the growth rate of *per capita* income in real terms has always remained low and difference between the growth rates of the state income and *per capita* income is explained by the growth of population at a high rate during the period. The slow rate of growth of the state *per capita* is also accountable to the relatively smaller size of its domestic product in comparison with other States.

The following table shows the *per capita* income at 1970-71 prices for India and Orissa.

TABLE 9

Year	Orissa	India	Gap	Percentage of Col. 2 to Col. 3
(1)	(2)	(3)	(4)	(5)
1970-71	478.1	632.8	154.7	75.55
1971-72	426.7	626.6	199.9	68.10
1972-73	462.0	603.0	141.0	76.62
1973-74	482.9	620.1	137.2	77.87
1974-75	409.7	615.5	205.8	66.56
1975-76	475.1	660.0	184.9	71.98
1976-77	437.8	649.5	214.7	67.41
1977-78	503.4	692.7	189.3	72.67
1978-79	527.3	719.9	187.6	73.76
1979-80(P)	427.7	660.1	232.4	64.79
1980-81 (P)	529.3	696.0	167.5	75.96
1981-82 (Q)	563.5	715.3	151.5	78.78
1982-83 (Q)	507.4	712.1	204.7	71.25

P—Provisional

Q—Quick

Source: Seventh Plan 1985—90 (Orissa), Draft,
Government of Orissa, Nov. 1984, p. 7

In a comparison of the state and national incomes *per capita* what stands in bold relief is the slow rate of growth of the state *per capita* income. During 1981-82 and 1982-83, the national *per capita* income did not undergo much change but the state *per capita* income declined in 1982-83 by 10 per cent. Though one of the main objects of State Planning is to accelerate the growth of the economy so as to bring the state income *per capita* nearer the national level, the gap between them has not narrowed down much. The low level *per capita* income highlights the poverty of the people. The inter-state comparison shows that there are few other states whose *per capita* income is as low as that of Orissa. It is to be noted that in spite of the reduction in the growth rate of population in the last decade, the growth of *per capita* income has not shown any marked upturn. The rise between the *per capita* income in 1970-71 and 1980-81 was about 10.7 per cent which was far from reducing the gap between the national and the state *per capita* income. The reasons for this distortion are many. The *per capita* plan outlay of Orissa has been extremely inadequate and the maximum reached in the sixth Plan was only Rs. 41.55 compared to the all-state average of Rs. 54.49. During the sixth Plan period Orissa ranks third among the economically backward states. A substantial step-up in the *per capita* investment through higher Plan outlays and Central Government's assistance is, therefore, imperative. The economy has achieved a compound growth rate of 2.39 per cent between 1970-71 and 1982-83 as said before. The achievements during the sixth Plan have been higher than the past, though less than what was targeted and more unstable than what was desirable. A part of the shortfall and much of the instability is attributed to the vicissitudes of nature and the devastations caused by natural calamities which have occurred too frequently. The magnitude of the problem is clearly noticed in a recent study according to which in the last 20 years between 1964-65 to 1983-84 only seven have been normal years and the rest was afflicted by either cyclones, floods and droughts or all together. But, the gap between the plan and the performance is also due to inadequacies in the maintenance of public investments at the targeted level and deficiencies in the management and utilization of assets.

Decline in the Consumer Expenditure

The trend of consumer expenditure provides a better insight into the level of living of the people. The table 10 shows the distribution of consumer expenditure in rural and urban areas of Orissa.

TABLE 10

Distribution of consumer expenditure in rural and urban areas of Orissa

Year	N. S. S. Round	Monthly <i>per capita</i> consumption expenditure (Rs.)		<i>Per capita</i> expenditure at 1960-61 prices (Rs.)	
		Rural	Urban	Rural	Urban
(1)	(2)	(3)	(4)	(5)	(6)
1960-61	.. 16th	18.76	31.95	18.76	31.95
1965-66	.. 20th	24.00	36.09	16.30	25.19
1970-71	.. 25th	32.18	45.77	15.90	22.61
1973-74	.. 28th	39.19	60.15	17.22	26.34

Source: Economic Survey of Orissa, 1977, Bureau of Statistics and Economics, Orissa, 1979, page 7.

Table 10 reveals that the monthly *per capita* consumer expenditure has increased from Rs. 18.76 in 1960-61 to Rs. 39.19 in 1973-74 in rural areas and from Rs. 31.95 to Rs. 60.15 in urban areas. Apparently this indicates that the living standard of the people have increased substantially both in rural and urban areas. But during this period, the consumer price index has gone up rapidly due to exorbitant increase in prices. Adjusting the expenditure with consumer price indices, there has been a decline in the *per capita* consumer expenditure at 1960-61 prices. The quantity of consumption has fallen from Rs. 18.76 to Rs. 17.22 (about 8.2 per cent) in rural areas and from Rs. 31.95 to Rs. 26.34 (about 17.3 per cent) in urban areas of the state during the period 1960-61 to 1973-74.

High Percentage of consumer expenditure on food

Table 11 given below shows the distribution of consumer expenditure on food and non-food items in Orissa from 1960-61 to 1973-74.

TABLE 11

Distribution of consumer expenditure on food and non-food items in Orissa from 1960-61 to 1973-74

Year	N. S. S. Round	Percentage distribution of food and non-food items			
		Food		Non-food	
		Rural	Urban	Rural	Urban
(1)	(2)	(3)	(4)	(5)	(6)
1960-61 ..	16th	69.19	62.75	30.81	37.25
1965-66 ..	20th	76.71	67.54	23.29	32.46
1970-71 ..	25th	87.42	73.35	12.85	26.65
1973-74 ..	28th	80.94	71.39	19.06	28.61

Source: Economic Survey of Orissa, 1983-84, Bureau of Statistics and Economics, 1985, p. 20.

There has been not only a decline in the level of consumption expenditure in real terms during the period, but table 11 indicates that there has been a disproportionately high percentage of expenditure on food items. The total consumer expenditure on food items increased from 69.19 per cent in 1960-61 to 80.94 per cent in 1973-74 in rural areas and from 62.75 per cent in 1960-61 to 71.39 per cent in urban areas. A higher percentage of expenditure on food items which is relatively inelastic leads lower order of saving and hence results in low rate of economic growth in the state.

Personal income and expenditure

Personal income is estimated on the basis of income accrued to the people as distinguished from state income which is estimated on the basis of income originating in a given geographical boundary. Thus, a study of the distribution of personal

income of different socio-economic groups of households and expenditure incurred is a better indicator of the pattern of livelihood of the people. However, in this regard, there is a dearth of data in the state.

In the absence of the personal income data relating to Orissa, a study conducted by the National Council of Applied Economic Research (N.C.A.E.R.) in 1968 on All India Household Survey of Income, Saving and Consumer expenditure with special reference to middle-class households can be used for the purpose.

Table 12 shows the comparison of the amount of average income earned by households belonging to selected socio-economic groups, Orissa and India, 1967-68.

TABLE 12

Comparison of the amount of average income earned by a household belonging to Selected Socio-economic groups, Orissa and India, 1967-68

Socio-economic characteristic of the group of households (1)	Average disposable income earned by a household (in rupees)	
	Orissa (2)	India (3)
1. Self-employed non-farming ..	1,963	3,336
2. Self-employed farming ..	1,536	3,124
3. Government employees ..	3,561	3,782
4. Private employees ..	1,007	1,768
5. Households headed by persons having .. no formal education	1,123	2,215
6. Households headed by persons whose educational qualification is below matriculation	1,556	2,865

Source : Perspective Plan of Economic Development of Orissa, 1973-74—1983-84, Planning and Co-ordination Department, 1977, p. 30.

Table 12 indicates that the level of income of different selected socio-economic groups of households is much less compared to the corresponding income at all-India level.

An exercise done by the National Council of Applied Economic Research (N. C. A. E. R.) on the distribution of personal income by decile groups for Orissa and the country as a whole indicates that the share of income of bottom 20 per cent of the households in Orissa is 6.21 per cent and the share of the top 20 per cent of the households in Orissa is 46.56, corresponding percentage for the households for the country as a whole being 4.80 per cent and 53.26 per cent respectively.¹ The Lorenz Ratio, a summary measure adopted for assuming the degree of inequality in the distribution of income, has been worked out to be 0.39 for Orissa and 0.47 for the country as a whole. Thus, in Orissa, income distribution is relatively less sharp than the country as a whole. The presence of about 38 per cent of the Scheduled Tribes and the Scheduled Castes in the state, bulk of whom are more or less on the same income level has been attributed as a cause for the phenomenon.

A study of the distribution of consumer expenditure by income classes or total expenditure classes can throw better light on the livelihood pattern of the various decile groups. A study made by the N.C.A.E.R. on the basis of the household sample survey conducted in 1968 (referred to earlier) and N. S. S. referring to the period 1965-66 for Orissa is presented in the following table.

TABLE 13

Consumer expenditure in Orissa by decile groups—Comparison of N. C. A. E. R. and N. S. S. data

Decile groups	Consumer expenditure 1967-68 (Rs.)		Consumer expenditure <i>per capita</i> per month 1965-66 (Rs.)		
	Per house- hold per month	<i>Per capita</i> per month	Rural	Urban	Rural and urban com- bined
(1)	(2)	(3)	(4)	(5)	(6)
Bottom 10 per cent	51.10	10.28	11.02	16.78	11.31
Next 10 per cent	65.97	13.27	15.58	22.60	15.95
Next 10 per cent	83.57	16.81	18.63	27.03	19.05

(cont.)

1. Perspective plan of Economic Development of Orissa, 1973-74—1983-84, Planning and Co-ordination Department, Government of Orissa, 1977, p. 19.

Decile groups	Consumer Expenditure 1967-68 (Rs.)		Consumer Expenditure <i>per capita</i> per month 1965-66 (Rs.)		
	Per house- hold per month	<i>Per capita</i> per month	Rural	Urban	Rural and urban com- bined
(1)	(2)	(3)	(4)	(5)	(6)
Next 10 per cent	72.15	14.62	20.66	30.79	21.17
Next 10 per cent	82.37	16.57	22.17	33.32	22.73
Next 10 per cent	98.89	19.90	24.78	36.34	25.36
Next 10 per cent	112.35	32.60	26.46	45.80	27.43
Next 10 per cent	150.70	30.32	29.90	58.49	31.33
Next 10 per cent	178.87	35.99	35.08	75.17	37.08
Next 10 per cent	342.16	68.84	53.05	120.46	56.42
All classes	125.43	25.28	24.00	37.09	24.65

Source : Perspective plan of Economic Development of Orissa, 1973-74—1983-84, Planning and Co-ordination Department, Orissa, 1977, p. 31.

The N.C.A.E.R. data presented in the table 13 reveal that the *per capita* consumer expenditure on all goods and services was about Rs. 10 for the lowest 10 per cent of the population in Orissa when arranged on the basis of income whereas it was about Rs. 69 for the top ten per cent of the population. The data further reveal that the average *per capita* consumer expenditure for the state as a whole was about Rs. 25 per month in 1967-68. The N. S. S. data presented in the same table indicate that when arranged on the basis of consumer expenditure, the bottom 10 per cent of the population of Orissa had an average *per capita* consumer expenditure of about Rs. 11 in 1965-66 and the top ten per cent of the population had an average *per capita* consumer expenditure per month of about Rs. 56. The table further reveals that the distribution of consumer expenditure is more unequal in 1967-68 than in 1965-66. Data collected by both the sources indicate the inequality in the distribution of consumer expenditure.

Extent of Poverty

No separate study has been made for Orissa to measure the extent of people living below the poverty line. However, in July, 1972 a study group set up by the Government of India recommended

that the *per capita* monthly consumer expenditure of Rs. 20 (at 1960-61 prices) can be considered as the minimum subsistence level in India. Prof. Dandekar and Dr. Nilakantha Rath in their study on "Poverty in India" suggested that a minimum diet of 2,250 calories is needed for subsistence. This would require Rs. 15 *per capita* per month for the rural population and Rs. 22.50 *per capita* per month for the urban population at 1960-61 prices. Making adjustments for the price rise the Planning Commission have estimated that Dandekar and Rath's definition of poverty line would mean a *per capita* monthly expenditure of Rs. 20 in rural areas and Rs. 30 in urban areas at 1964-65 prices.

Accordingly, the Planning Commission has estimated the extent of people living below the poverty line in Orissa on the basis of the official consumer expenditure data available from different rounds of N. S. S. These estimates reveal that in 1964-65, 62.04 per cent for the rural Orissa and 57.58 per cent for urban Orissa were below poverty line. In 1967-68 this percentage for rural Orissa increased to 64 and in 1969 this further increased to 64.7 per cent for the total population of Orissa. A recent estimate made in the state indicates that there were at least 85 per cent of the people in Orissa living below poverty line.

This estimates further reveal that the livelihood pattern of the people of Orissa have deteriorated from year to year in spite of all the developmental efforts made by the Government to reverse this trend.

General level of prices

The most disquieting aspect of the current Indian economy scene is the severe and unabated pressures on the general price level. Excepting during the years 1968-69 to 1969-70 and 1975-76, when the inflationary tendency in the country was checked either because of exceptional good harvest or due to the introduction of a series of anti-inflationary measures, there has been a rising trend in the general price level in the country as a whole. During the year 1979-80 there was a 20 per cent rise in the general price level compared to the year 1978-79. Compared to the base year 1961-62, the wholesale prices in respect of all the commodities were more than doubled in 1972-73 (index number was 207.0) and became more than two and a half times in the year 1973-74 (index number was 254.0). Compared to the base-year 1970-71 as 100, the index number of wholesale prices in India was 184.4 in respect of all commodities. The national level of price is, more or less, applicable

to all the parts of the country on account of the unification of trade and commerce and also the national character of production in most of the important sectors of the country.

However, the regional trend of prices in Orissa is interesting to observe. The table 14 reveals the trend of rise in wholesale prices of a few important commodities of consumption, taking the period August, 1939 as the base period. Compared to this base period, the index number of wholesale prices of paddy increased to 1463 in the year 1968 and further went up to 2157 in 1977 and 2636 in 1980. In respect of other commodities like wheat, Mung, Biri, Arhar, tobacco, sugar, gram, mustard, etc., also there was, more or less, a similar trend of rise in the wholesale prices. But similar to the price rise trend of the country, the inflationary price rise trend was checked during the years 1969, 1970 and 1976. The high rate of increase in wholesale prices is generally attributed to shortages of consumer goods, industrial raw materials or falling short in the production of food grains or slow rate of increase in comparison to population rise. Droughts, floods, cyclones or other natural calamities are often attributed as causes of crop failure.

Index number of Retail prices

Table 15 shows the index number of retail prices of important commodities of common consumption taking August, 1939 as the base period. The table indicates that compared to the base period, the retail prices of rice increased to 1,329 in 1968 and reached the height of 2,012 in 1977 and 2,549 in 1980. In case of commodities like Ragi, wheat and pulses the trend was, more or less, the same. But a comparison of the Tables 14 and 15 reveals that the trend of rise in retail prices of commodities like rice and pulses were less steep than in case of wholesale prices of these commodities. The absence of adequate number of regulated markets in the state may be attributed as the main reason for this.

Although price rise affects all classes of people some groups are more affected than others, depending on the primacy and the relative weightage of the commodities in the consumption basket of that group of people. Therefore, indices of price for different categories of people became relevant for knowing how price rise affects different groups. The official collection of this type of disaggregated data, such as, working class consumer price index for industrial workers and the consumer price index for agricultural labour thus become relevant.

TABLE 14

Index number of wholesale prices (unweighted) in Orissa (Base: August 1939:100)

Period	Rice	Wheat	Mung	Biri	Arhar	Kulthi	Tobacco	Sugar	Gram	Mustard	Gur (Local)	Salt	Jute
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
1968	1,463	693	1,440	1,368	1,051	1,063	1,788	674	1,468	1,222	1,009	183	612
1970	1,339	829	1,289	1,120	974	723	1,414	572	1,496	1,199	410	197	731
1972	1,637	891	1,872	2,010	1,165	1,138	1,816	932	1,665	1,325	839	250	868
1974	2,413	1,257	2,406	1,905	1,805	1,836	2,078	1,251	3,237	2,238	983	352	887
1975	2,875	1,393	2,441	2,161	1,675	1,819	2,244	1,250	2,939	1,708	937	325	966
1976	2,134	1,351	2,008	2,156	1,305	1,391	2,815	1,265	2,171	1,467	1,107	280	965
1977	2,157	1,328	2,496	2,701	2,183	1,666	2,689	1,237	2,477	2,765	1,029	290	1,197
1978	2,095	1,234	3,572	2,861	2,890	1,583	2,350	854	3,175	2,585	830	422	1,147
1979	2,275	1,390	4,054	2,934	2,748	1,614	2,010	867	3,617	2,420	904	469	1,482
1980	2,636	4,458	4,339	2,746	2,744	1,949	2,162	1,742	4,765	2,952	1,740	478	1,775

Source : Statistical Abstract of Orissa 1981, Bureau of Statistics and Economics, Orissa, p. 397.

TABLE 15

Index number of retail prices (unweighted) in Orissa (Base: August 1989:100)

Period (1)	Rice (2)	Wheat (3)	Bliti (4)	Mung (5)	Gram (6)	Ragi (7)	Arhar (8)	Salt (9)	Cloth (10)	Kerosene (11)
1968	1,329	697	1,305	1,385	1,303	1,674	1,011	224	219	284
1970	1,268	862	1,086	1,250	1,323	1,478	944	250	233	307
1972	1,512	927	1,848	1,817	N. A.	2,087	1,136	316	312	340
1974	2,232	1,248	1,876	2,356	2,778	2,870	1,712	421	475	521
1975	2,720	1,482	2,086	2,375	2,606	3,261	1,661	395	499	586
1976	2,000	1,376	2,057	2,000	1,980	2,852	1,294	342	453	637
1977	2,012	1,349	2,552	2,404	2,182	3,022	2,113	368	501	642
1978	1,976	1,266	2,733	3,038	2,747	3,130	2,763	513	512	660
1979	2,122	1,367	2,829	3,452	2,798	2,804	2,678	566	537	735
1980	2,549	1,486	2,733	3,769	3,909	2,913	2,650	592	588	795

Source: Statistical Abstract of Orissa 1981, Bureau of Statistics and Economics, Orissa, p. 396.

Working Class Consumer Price Index Numbers

Consumer price index for working class brought out by the Labour Bureau, Ministry of Labour and Employment, Government of India for Cuttack and Brahmapur for the period 1961 to 1977 are furnished in Table 16. The table shows that there has been a continuous upward rise in the price index of food articles as well as in the general index. The index of food prices at Cuttack increased from 100 in 1961 to 317 in 1977. This shows a faster rate of increase than the general price index which increased from 103 to 306 during the same period. The index of food prices at Brahmapur increased at a faster rate. It increased from 105 in 1961 to 361 in 1977.

The price rise in food articles pushed up the general price index. The working class general price index increased more than three times within a period of 17 years from the year 1961 to 1977. The general price index of Brahmapur increased at a faster rate (i.e., 105 points in 1961 to 361 points in 1977) compared to that of Cuttack and India which increased to 306 points and 321 points respectively in 1977.

TABLE 16

Working Class Consumer Price Index number for Cuttack, Brahmapur and All-India, (Base 1960 : 100)

Year (1)	Cuttack		Brahmapur		All-India	
	Food (2)	General (3)	Food (4)	General (5)	Food (6)	General (7)
1961 ..	100	103	105	105	109	104
1966 ..	165	160	174	172	174	151
1970 ..	213	202	222	218	200	184
1973 ..	244	228	280	273	262	236
1974 ..	292	273	343	331	342	304
1975 ..	324	308	426	396	357	321
1976 ..	286	N. A.	334	342	312	296
1977 ..	317	306	350	361	343	321

Sources : 1. Economic Review of Orissa, 1974, B.S.E., Orissa, 1975, p.119.

2. Economic Survey of Orissa, 1977, B.S.E., Orissa, 1979, p.72.

Consumer price index for Industrial Workers

Table 17 deals with the new series of consumers' price index for industrial workers with the base year 1960 as 100. This index covers the consumption pattern of industrial workers only, while the working class consumer price index represents the consumers price pertaining to all working people. The consumer price index of Sambalpur has increased from 100 points in 1961 to 587 points in 1983 indicating a faster rate of increase than Barbil and All-India during the same period. Between the year 1980 and 1981, the consumer price index of industrial workers at Sambalpur, Barbil and Rourkela increased by 4.8 per cent, 12.9 per cent and 9.9 per cent respectively.

Between the year 1982 and 1983, the consumer price index of industrial workers at Sambalpur, Barbil and Rourkela increased by 11.2 per cent, 15.4 per cent and 9.6 per cent respectively.

TABLE 17

Consumer Price Index for Industrial workers, Base year 1960: 100

Year		Sambalpur	Barbil	Rourkela Base year 1966 : 100	All-India
(1)		(2)	(3)	(4)	(5)
1961	..	100	98	..	104
1965	..	133	119	..	137
1969	..	181	172	119	175
1973		233	213	162	236
1974		301	285	204	304
1975	..	342	311	224	321
1976	..	298	292	205	296

(Cont.)

Year		Sambalpur	Barbil	Rourkela Base year 1966 :100	All-India
(1)		(2)	(3)	(4)	(5)
1977	..	334	309	234	321
1978	..	350	312	243	329
1979	..	376	322	260	350
1980	..	434	356	281	390
1981	..	455	402	309	441
1982	..	528	448	334	475
1983	..	587	517	366	532

Sources : Statistical Abstract of Orissa, 1981, p. 399 and 400; and Economic Survey of Orissa, 1983-84, Bureau of Statistics and Economics, p. 252-54.

Consumer Price Index Number for Agricultural Labourers

Table 18 shows the consumer price index for agricultural labourers in Orissa with 1960-61 as the base year. It is seen from the table that the prices of food articles increased at a faster rate (i.e., it increased from 153 in 1965-66 to 674 in 1983-84) than that of the general goods of consumption in case of which the rise of price index was from 162 to 601 during the same period. It is also seen that consumer price for agricultural labourers showed an erratic behaviour of ups and downs. The consumer price index which was 153 in 1965-66 reached the level of 433 in 1975-76 and then declined to 375 in 1976-77 and gradually rose to 674 in 1983-84.

TABLE 18

Consumer price index for Agricultural Labourers, Base year July 1960
to June 1961 (Agricultural year) as 100

Period (1)		Food groups (2)	General (3)
1965	..	153	162
1970-71	..	232	212
1973-74	..	313	282
1974-75	..	442	397
1975-76	..	433	385
1976-77	..	375	344
1977-78	..	387	351
1978-79	..	382	350
1979-80	..	441	417
1980-81	..	480	441
1981-82	..	536	501
1982-83	..	657	610
1983-84	..	674	601

Source: Economic Survey of Orissa, 1983-84, Bureau of
Statistics and Economics, p. 256.

Wages

Data on wages for industrial labour in Orissa are not available as yet in any systematic form. But it is observed from common experience that the industrial labour is the only organised group of labourers in our state and because of trade union activities and the skill they possess, they get higher level of wages than the labourers in the rural areas. However, the Bureau of Statistics and Economics, Orissa, has compiled the rural daily wages of different classes of labourers in Orissa from the data collected through District Statistical offices. This gives an idea of the rising trend in the wages for all classes of labour in rural areas. As rural workers represent the bulk of the labourers in the state this information indicates the trend of wages in Orissa.

The rural daily wages for different classes of labourers in Orissa are given in Table 19. The table shows the trend of rural daily wages for skilled labourers, field labourers and other agricultural labourers. The table also shows that there has been a steady rise in the level of money wages in respect of all types of labourers

in rural areas. The wages of skilled labourers in respect of carpenter, cobbler and blacksmith were Rs. 4.74, Rs. 4.39 and Rs. 4.81 respectively in the year 1970 and the wages increased to Rs. 14.50, Rs. 9.47 and Rs. 10.16 respectively in 1980. Similarly the wages of field labourers in respect of men, women and children increased from Rs. 2.14 to Rs. 5.00, Rs. 1.62 to Rs. 4.30 and Rs. 1.27 to Rs. 3.81 respectively during the same period. The trend of increase in money wages for other agricultural labourers was more or less similar to those of field labourers.

However, because of sharp rise in the prices of food articles and other commodities of common consumption, as discussed earlier, the real wages actually declined. This decrease in the real wages has adversely affected the living standard of labourers both in rural and urban areas.

TABLE 19
Rural daily wages of different classes of labourers in Orissa (in rupees)

Period	Skilled labour			Field Labour		
	Carpenter	Cobbler	Black-smiths	Men	Women	Children
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1970	4.74	4.39	4.81	2.14	1.62	1.27
1971	4.95	4.63	4.81	2.16	1.62	1.32
1972	5.22	3.42	4.83	2.30	1.72	1.39
1973	5.67	4.27	5.16	2.49	1.84	1.50
1974	6.54	5.24	6.03	2.89	2.24	1.86
1975	7.37	6.44	6.83	3.34	2.78	2.16
1976	8.15	6.81	7.21	3.93	3.57	2.72
1977	8.61	7.29	7.94	4.09	3.80	2.83
1978	9.01	7.78	8.19	4.21	3.80	2.95
1979	10.46	8.76	9.23	4.55	3.96	3.48
1980	14.50	9.74	10.16	5.00	4.30	3.81

(Continued)

(1)	Other Agricultural Labour			
	Men	Women	Children	Herdsman
(1)	(8)	(9)	(10)	(11)
1970	2.25	1.60	1.30	1.73
1971	2.16	1.62	1.31	1.73
1972	2.27	1.72	1.39	1.68
1973	2.49	1.85	1.51	1.83
1974	2.97	2.28	1.86	2.23
1975	3.32	2.77	2.14	2.72
1976	4.01	3.57	2.70	3.77
1977	4.17	3.83	2.84	3.84
1978	4.21	3.80	2.91	3.95
1979	4.87	4.07	3.53	4.56
1980	5.37	4.48	3.85	4.98

Source: Statistical Abstract of Orissa 1981, Bureau of Statistics and Economics, pp. 394-95.

State Planning and Community Development Pre-plan period

The state of Orissa was carved out of the neighbouring provinces in 1936 and before it could settle down, it had to bear the impact of the Second World War. This resulted in the postponement of all major schemes of development till the completion of the war and restoration of peaceful conditions. It was only after the year 1945, under the post war reconstruction programme that the State Government got an opportunity to organise its administrative and service wings so as to take up any appreciable programmes of development.

The State Government drew up an ambitious programme of post-war reconstruction which envisaged an all-round development of the state. The main objectives of the programme were to provide adequate food and clothing, full employment and healthy conditions of living. Considerable importance was also given in the programme for development of liberal education and exploitation of unexploited natural resources of the state.

The post-War reconstruction programme was contemplated for a period of five years commencing from April, 1947. It envisaged an expenditure of Rs. 37.89 crores against a promised block grant of Rs. 9 crores by the Central Government. In the pre-plan interim period only some special priority and preparatory schemes involving an expenditure of Rs. 1.92 crores were implemented. However, during that period nothing tangible could be achieved in the state.

Orissa assumed its present shape in 1949, with the merger of 24 feudatory states between the period 1st January, 1948 to 1st January, 1949. The merger was significant for the state, as it resulted in increasing the area of the province by 84 per cent and the size of the population by 60 per cent.

State of Economy in pre-Plan period

When the nation embarked on the economic planning in the year 1951, the economic condition of the state was very backward and it presented the problem of cumulative economic back-log of a serious proportion. "The State had practically no power, hardly any irrigation, no industries worth the name, an extremely inadequate system of railways and roads, unsatisfactory public health conditions and total absence of facilities for education, especially in technical subjects. The extremely low level of urbanization was marked by the absence of commercial banks and business houses, resulting in lack of facilities for modern financial and commercial practices. This accounted for capital and entrepreneurial talent being shy."¹ In addition the state had feudal system of land-laws characterised by absentee land-lordism. Floods and droughts were recurrent problem of the state. The administrative machinery of the time was also not geared up to the needs of a developing economy.

1. Orissa and the three Five Year Plans, 1951-1966, Government of Orissa, Planning and Co-ordination (Planning) Department, 1967, p. 1.

The backwardness of Orissa is a paradox, because the state is rich in mineral, forest and water resources. Orissa possesses 10 per cent of the water resources of which not more than one-tenth has been harnessed so far. The area under irrigation in the state is hardly 19.9 per cent of the gross cropped area against 30.6 per cent of the country as a whole (1979-80). The installed capacity of power generation is a small fraction of the estimated potential, the state has one-third of the country's total resources of iron-ore, 40 per cent of manganese, 90 per cent of chromite and virtually inexhaustible reserves of bauxite, dolomite, coal and mineral sands. However, hardly 5 per cent of the total mineral production in the country is being raised in the state. The broad objective of planning to exploit those resources for securing a sizable increase in the state income, and to raise the standard of living of the people, reducing the disparity in the levels of development in different regions of the state as well as the inequalities in income and wealth among the different income groups of the community, and to maximise employment opportunities for the people.

Financial Outlays

Hence, substantial investments have been made during the plan period for the development of the different sectors of the economy. Table 20 shows the outlays made in different sectors of the state during the various plans.

Table 20 indicates that during the First Plan the total outlay was moderate to the tune of Rs. 18.42 crores. The total outlay incurred during the Second and the Third Plan were Rs. 86.59 crores and Rs. 224.58 crores respectively. The total outlay during the three Annual Plans was Rs. 124.95 crores. During the Fourth Plan the outlay increased to Rs. 249.34 crores and it further increased to Rs. 433.62 crores during the Fifth Plan period. During the Sixth Plan the approved outlay has further gone up to the level of Rs. 150.00 crores. The sectoral outlay during the Sixth Plan were Rs. 9,015 lakhs in agriculture and allied services, Rs. 13,525 lakhs in rural development, 3,000 lakhs in co-operation, Rs. 47,000 lakhs in irrigation and flood control, Rs. 41,000 lakhs in power, Rs. 6,485 lakhs in industry and minerals, Rs. 10,825 lakhs in transport, Rs. 18,205 lakhs in social and community services, Rs. 225 lakhs in economic services and Rs. 720 lakhs in general services. The percentages of outlay were 6.01 per cent, 9.02 per cent, 2.0 per cent, 31.33 per cent, 27.33 per cent, 4.32 per cent, 7.22 per cent, 12.14 per cent, 0.15 per cent and 0.48 per cent. Besides these outlays, about Rs. 63 lakhs were expended during the Sixth Plan for scientific services and research.

TABLE 20
Sector-wise Plan expenditure outlays under different plans (rupees in lakhs)

Plan Period	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Agriculture and Allied Services	Co-operation	Irrigation and Power	Industry and Mining	Transport and communication	Social Services	Miscellaneous	Total
<i>Expenditure</i>									
First Plan (1951-56)		514.90	17.26	481.55	108.13	271.24	445.99	2.75	1,841.82
Second Plan (1956-61)		1,787.66	97.47	3,971.37	393.74	603.75	1,487.10	318.08	8,659.17
Third Plan (1961-66)		3,996.66	237.00	8,085.00	2,026.00	3,846.00	3,833.88	434.05	22,458.59
Annual Plan (1966-67)		881.70	70.51	1,939.59	493.94	755.91	510.02	59.97	4,707.64
Annual Plan (1967-68)		807.88	67.86	1,813.25	369.48	688.48	648.81	13.49	4,409.25
Annual Plan (1968-69)		465.23	33.99	1,713.02	330.28	292.63	532.92	10.13	3,378.20
Fourth Plan (1969-74)		4,649.58	676.07	11,395.48	2,114.56	1,663.34	4,030.21	405.85	24,934.09
Fifth Plan (1974-78)		6,754.11	989.29	25,984.89	1,323.00	2,862.59	7,107.77	339.82	45,362.26
Annual Plan (1978-79)		3,842.00	510.00	10,300.00	530.00	1,013.00	2,752.50	152.50	19,100.00
Annual Plan (1979-80)		3,988.00	520.00	11,000.00	690.00	1,114.00	2,503.00	185.00	20,000.00

N. B. Figures of the Fifth Plan expenditure may undergo changes after verified actuals are received from A.G., Orissa.

Source : Orissa Budget, Some Facts and Charts—1979-80, Bureau of Statistics and Economics, Orissa, 1979

Progress made in Selected Sectors

(i) Agriculture

Agriculture provides employment to more than 79 per cent of the working population of Orissa and accounts for about 69 per cent of the state's income. Hence, increasing emphasis has been given to this sector in all the plans excepting the Second Plan period. The expenditure under Agriculture and Allied Services has increased from Rs. 5.15 crores during the First Plan period to Rs. 67.54 crores during the Fifth Plan. The production of foodgrains in the state has gone up from 23.93 lakh tons in 1951 to 55.70 lakh tons in the year 1975-76. Sugar production in terms of Gur has increased from 0.92 lakh tons in 1955-56 to 2.77 lakh tons in 1976-77. Oil-seeds production has increased from 0.68 lakh tons in 1955-56 to 2.43 lakh tons in 1976-77. During the 16 years (i.e., 1960-1975), the rate of growth of Agriculture Sector was about 4 per cent per annum. The annual rate of growth of production of non-foodgrains was at the rate of 7.8 per cent which was higher than that of foodgrain production at the rate of only 2.3 per cent per annum during the same period. Production of 51.2 lakh tonnes of rice during 1983-84 was the record production in the state. The production of non-food items has increased from 8.5 lakh tonnes to 11.1 lakh tonnes or 30.6 per cent rise in 1981-82 over the year 1968-69. Production of oil-seed has increased from 1.9 lakh tonnes in 1968-69 to 5.9 lakh tonnes in 1981-82.

The impressive growth rate in the production of non-food grains is largely due to the success of our planned efforts in the development of commercial crops. However, unfavourable weather condition, resulting from frequent floods and droughts, is one of the main limitations in the production of foodgrains and it still stands as a big hurdle on the way of progress of this sector.

During the First Plan period, additions to agricultural output were secured more due to the extension of the area under cultivation than due to any increase in production per acre. However, in the subsequent plans, efforts were made to enlarge the supply of inputs, like water, fertilisers, pesticides, powers, etc. to facilitate increase in agricultural production. The area coverage and production of rice in 1983-84 was the highest in the last 24 years. The yield rates being 19.17 quintals per hectare in respect of winter paddy and 26.33 quintals per hectare in respect of summer paddy were also the highest. The consumption of fertiliser and plant nutrients was for the first time exceeded more than one lakh tonnes in 1983-84. The main strategy for agricultural development in the Seventh Plan is to increase food production to achieve self-sufficiency.

(ii) Co-operation

During the first three Five Year Plans, 3500 agricultural credit societies with a total membership of 13 lakhs were established. In the Fifth Plan period the non-viable Primary Agricultural Credit Societies (PACS) were liquidated or merged to form larger potentially viable units and there were 3250 P. A. C. S. with a total membership of 23 lakhs by the end of 1977-78. In the tribal areas, 220 LAMPS (Large-sized Agricultural Multi-purpose Co-operative Societies) have been formed and the existing Primary Co-operative Societies have been converted as their branches.

As against an investment of Rs. 1.78 crores in short term and medium term credit given to the agriculturists at the end of the First Plan period, the investment of PACS in short term credit alone went up to Rs. 78.91 crores during 1974-75. In addition, a sum of Rs. 27.11 crores invested in medium term loans by the PACS for the construction of dug-wells, dairy programmes and other similar productive lines. The co-operatives have played a major role in financing 1.82 lakhs dug-wells during the Fifth Plan period.

Out of 38.72 lakh agricultural families in the state, 27.47 lakh families were brought into the co-operative fold in the Sixth Plan period. All the Grama Panchayats in the state have been covered by the co-operative societies for the distribution of consumer goods. The value of the goods handled by these societies was about rupees 48 crores during the Sixth Plan period. They transacted fertilisers and agricultural commodities worth rupees 5 crores and 35 crores respectively. The co-operatives financed for about 3.37 lakh dug-wells in the state out of which 2.12 lakh dug-wells have been completed, creating an additional irrigation potential of 2.61 lakh acres. Crop insurance scheme have been introduced in 160 Community Development Blocks. For storing agricultural produce 1.16 lakh tonnes of storage capacity has been built up with the assistance of World Bank. Another World Bank assisted project is also under-way to built up further storage capacity of 2.63 lakh tonnes.

(iii) Irrigation

In the pre-Plan period the total irrigation potential created was 3.7 lakh acres. During the First Plan period the construction of Hirakud Dam Project was taken up which was completed in 1960. In the Second Plan period two major projects, namely, Mahanadi Delta Project and Salandi Irrigation Project along with 7 medium irrigation projects were taken up for execution. None of these projects could be completed, excepting Mahanadi Delta Project and Hirakud Dam Project which created an additional irrigation potential of 7.06 lakh acres in the Second Plan Period. The total irrigation potential created at the end of the

Third Plan period including the pre-Plan achievement was 13.90 lakh acres. There were five major projects including the four continuing major projects, 18 medium projects including 10 new projects taken up during the 4th Plan period, out of which only one major project, namely Hirakud Dam Project was completed in all respects. During the Fifth Plan two new major irrigation projects, namely, Rengali and Upper Kolab, and 15 new medium irrigation projects were taken up in addition to the incomplete major and medium irrigation projects. Out of these Salandi Project was almost completed and ten other medium irrigation projects have been completed during the Fifth Plan. Four major irrigation projects and 23 medium irrigation projects have been spilled over to the Sixth Plan period. The additional irrigation potential created during the Fifth Plan has been of the order of 1.86 lakh hectares under major and medium irrigation projects. At the commencement of the Sixth Plan, 39 major and medium irrigation projects were under execution including 3 multipurpose projects, viz., Rengali, Upper Kolab and Upper Indrabati, 5 major projects, viz., Mahanadi Delta, Salandi, Anandapur, Rengali and Mahanadi Barrage, 17 World Bank assisted projects and 14 other projects. Besides, 3 modernisation schemes relating to Rushikulya, Baladiha and Hirakud had also been taken up. By the end of 1983-84, nine of these projects had already been closed/completed and 3 modernisation projects had reached the completion stage. During 1984-85, nine more projects assisted by the World Bank are scheduled to be completed in addition to the Rengali Dam Project. Certain items of Rengali Dam Project may, however, spill over to the first year of the Seventh Plan. The completion of the projects would yield an additional irrigation potential of about 98.06 thousand hectares. Irrigation of about 29.50 thousand hectares would also be available from the central sector Potteru Project during the Sixth Plan. The total irrigation potential likely to be created at the end of the plan would, thus, be about 127.56 thousand hectares against the target of 186 thousand hectares. The shortfall is mainly due to inadequacy of resources.

In addition, 261 Minor Irrigation (Flow) projects were taken up during the Fourth Plan period, including 130 spilled over projects, out of which 92 projects were completed creating an additional ayacut of 60,000 hectares. The emphasis during the Fifth Plan was on completion of 169 spilled over projects and only 8 new projects were taken up during the period and 5 old projects were dropped. During the period 1974-78, 142 projects were completed creating additional irrigation potential of 54,197 hectares.

In addition, at the end of the Fourth Plan period there were a total of 1398 Lift Irrigation (Minor) Projects with a total

ayacut of 32,430 hectares in Kharif and about 19,000 in Rabi. During the Fifth Five Year Plan the Lift Irrigation Corporation commissioned 1436 lift irrigation points consisting of 707 tube-wells and 729 river lifts which created an additional potential of 47,270 hectares. Thus, a total of 4.08 lakh hectares additional irrigation potential was created during the Fifth Plan period.

The Sixth Plan programme for minor irrigation includes the completion of 331 projects carried over from the Fifth Plan and execution of new projects in the drought prone and tribal areas of the state. Out of the carried over projects, 300 have already been completed and the rest are scheduled for completion by the end of 1984-85. Of the new projects, 67 in number, 17 are targeted for completion during the same period. The additional irrigation potential likely to be created by these projects is 48,601 hectares against the plan target of 40,000 hectares. The Sixth Plan target for additional potential from lift irrigation projects in the public sector was 47.5 thousand hectares. Lift irrigation projects of 1900 were also proposed to be energised during the plan period. The Lift Irrigation Corporation, however, energised 2,233 projects in the first 3 years of the plan creating an additional irrigation potential of 52.01 thousand hectares. By the end of the plan period, the additional potential from lift irrigation (public sector) is expected to be about 109.50 thousand hectares. Over the years, a massive dug-well programme has also been in operation in the state. The Sixth Plan programme includes the construction of 4 lakh dug-wells. It is expected that by the end of plan period, about 2.50 lakh dug-wells may be constructed providing an additional irrigation potential of about 161 thousand hectares. The over-all achievement in the creation of additional irrigation potential from all sources by the end of the Sixth Plan would be of the order of 4.47 lakh hectares. An important aspect of the irrigation strategy in the state is to provide adequate irrigation facilities to all Community Development Blocks. Each C. D. Blocks in the state is proposed to be provided additional irrigation of 500 to 1,000 acres by the end of the Sixth Plan by extending the existing irrigation systems, renovating tanks and providing lift irrigation and water harvesting structures. It is estimated that by this process, 160 out of 314 Blocks, would get irrigation facilities of 1,000 acres or more, 88 would have additional irrigation of 500 to 1,000 acres and 64 Blocks with limited irrigation potential would get less than 500 acres of irrigation.

(IV) Power

Considerable progress has been made in power generation in Orissa since the beginning of the First Plan period.

By the end of the 2nd Plan the installed capacity increased from 9.6 megawatt in 1950 to about 260 megawatt. During the Third Plan the installed capacity increased to 310 megawatt and by the end of the Fourth Plan period it increased to 681.5 megawatt. The Fifth Plan created an additional capacity of 240 megawatt in Balimela Project and by the end of the year 1977-78 the total installed capacity reached the height of 914 megawatt with firm power generation of 469 megawatt. During the Sixth Plan period the installed capacity was raised to 1134 megawatt with firm power capacity of 614 megawatt.

The per capita consumption of electricity which was 31.7 kWh. in 1961-62 increased to 100 kWh. in 1977-78. Out of the total length of 923 km. of 132 K. V. lines taken up during the Fourth and the Fifth Plans, a length of 324 km. was completed by the end of 1977-78.

The generation of power grew nearly 120 per cent during the the period 1973-74 to 1983-84. Consumption of electricity also increased by 75 per cent during the same period. With the increase in generation and supply of electricity the *per capita* consumption of electricity was increased to 115 kWh. in 1983-84.

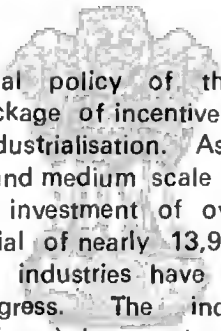
23,745 villages constituting about 50.28 per cent of the total villages were electrified by the end of Sixth Plan.

(v) Industries

At the beginning of the First Plan, Orissa had only one small paper mill, a sugar mill, a re-rolling mill, a glass factory, a textile mill and a refractory unit. The construction of Hirakud and Machhakund hydel projects and setting up of the public sector steel plant at Rourkela gave impetus to the establishment of a large number of other ancilliary industries. During the Second Plan a number of other industries also developed in the private sector. They were a low-shaft pig iron plant at Barbil, ferro-manganese plants at Joda and Rayagarha, four refractories, one cement factory, three cotton textile mills, two paper mills, one steel tube mill, one aluminium plant and one aluminium cable unit. Construction of Industrial Estates was taken up during this period. The Orissa State Financial Corporation was also set up with a view to providing institutional finance and for giving incentives to small and medium sized industries.

During the Third Plan the most conspicuous achievement in this sector was the setting up of an Industrial Development Corporation for encouraging the growth of large and medium industries in

the state. The Corporation set up a number of industries in the public sector. These are, a cement factory at Baragarh, a re-rolling mill and a cable factory at Hirakud, a low-shaft pig iron plant at Barbil, an industrial salt factory at Ganjam, a structural workshop at Hirakud and a medium sized tile factory at Chaudwar. It also helped in the development of Talcher Industrial complex. Besides, the corporation also assisted private units like caustic soda and chlorine plant in Ganjam district, a ferro-silicon plant and a paper mill at Rayagarha. Under the rural industrialisation programme, 143 Panchayat Industry units were sanctioned to be set up out of which 105 were in production by the end of 1965-66. Development of small industries was also emphasised in the Annual Plans from 1966-67 to 1968-69. A division of Hindustan Aeronautic Limited was established in Koraput district during the Fourth Plan. The Fourth Plan emphasised more on the labour intensive industries in order to create maximum employment opportunities.



The present industrial policy of the State Government envisages provision of a package of incentives and concessions to entrepreneurs for rapid industrialisation. As a result of the new industrial policy 71 large and medium scale industries came up in the Sixth Plan with a total investment of over Rs. 152.56 crores and an employment potential of nearly 13,914 persons. Besides, 92 large and medium scale industries have been identified and are at various stages of progress. The industrial complex at Chandaka (near Bhubaneswar) has made good progress. The Orissa Industrial Infrastructure Development Corporation developed 1768 acres of land and constructed 906 sheds. The Electronic Development Corporation has identified 27 projects out of which 8 projects have made good progress. The Industrial Promotion and Investment Corporation has provided assistance of about Rs. 94.20 crores to 80 large and medium industries. The State Financial Corporation has disbursed loans of more than Rs. 106.53 crores to various industries up to 1983-84. By the end of 1983-84, 11,116 small scale industrial units were established with an investment of about Rs. 88.48 crores. Special attention has been given to the development of artisan-based industries. High priority has been given to handloom industry during the Sixth Plan. The number of handlooms has gone up to 1.59 lakhs providing direct employment of 3 lakh persons. The expansion has helped in increasing the production of handloom cloth from 667 lakhs at the beginning of the plan to 760 lakh metres at present. The production of Janata fabrics has gone up from 128 lakh metres to 270 lakh metres at the end of 1983-84.

(VI) Transport and Communication

By the end of the First Plan, Orissa had only 1,353 km. (858 miles) of railway lines or about 5.5 km. of railway line per 1,000 sq. km. At the beginning of the Sixth Plan this increased to 13 km. of railway line per 1,000 sq. km. as compared to 18 km. for all-India and 43 km. in West Bengal.

There were 70.4 km. (55 miles) of surfaced roads per 1,000 square kilometres in the state in 1958. During 1975-76 the surfaced roads in the state increased to 13,331 km. or about 86 km. per 1,000 km. Orissa has only 49 km. of surfaced roads per lakh of population as against 86 km. for all-India and 234 km. in Kerala.

The allocation of funds in the Sixth Plan under road development programme was Rs. 52.25 crores. The programme for road development in the Seventh Plan is to optimise the existing network by improving the major roads and the link roads. The main emphasis would, however, be on completion of the incompleting works particularly bridges which would facilitate all-weather communication. Under the Minimum Needs Programme 116 spill-over projects are proposed to be completed with additional 39 new projects. The work on Talcher-Sambalpur and Rayagarha-Koraput rail links are in progress. Acquisition of lands for the third phase of Jakhapura-Banspani rail link will be taken up. The Ministry of Railways have accepted the proposal of the State Government to take up the rail link between Khorda and Balangir. In the port sector, completion of ongoing works mainly the minor port at Gopalpur in Ganjam district has been given priority in the Seventh Plan.

(VII) Education

After independence there was a rapid expansion of general education at all levels. At the beginning of First plan, there were 9,801 primary schools with an enrolment of 3.15 lakh children including 64,000 girls. There were 501 Middle English schools and 172 High English schools with enrolments of 40,000 and 16,000 respectively. There were 14 Arts and Science colleges and one affiliating university with a total enrolment of 6,282 students including 289 girls.

During the first two plans significant progress was made in raising the general level of education in the state. By the end of the Second Plan, there were 20,280 Primary schools with an enrolment of 12.63 lakh children including 4.03 lakh girls. The number of Middle English schools went up to 1242 and High English schools to 447. The introduction of universal free and

compulsory education further increased the Primary school enrolment to 16.92 lakhs by the end of the Third Plan period. The corresponding rise in enrolment in the Middle and Secondary schools was 2.15 lakhs and 18.7 lakhs respectively by 1965-66.

According to the Third Educational Survey, about 75 per cent of the children were enrolled by the end of the Third Plan. As against 7 per cent of boys and 0.5 per cent of girls enrolled in the Middle English schools in 1950-51, the percentages went up to 31 and 11.2 respectively by the end of the Fourth Plan period. About 82 per cent children in the age group 6 to 11 and 25.6 per cent in the age group 11 to 14 were enrolled in schools by the end of the Fifth Plan period. During the Sixth Plan period, it is aimed to enroll hundred per cent of children in the age group 6 to 11 and 68 per cent in the age group 11 to 14.

As regards higher education, the number of universities has increased from one in 1960-61 to four and the number of colleges from 29 to 92 in 1976-77. The total enrolment has increased from 10, 689 to 85, 871 during the same period. This has increased the percentage of enrolment in the age group 17 to 23 from 0.8 per cent in 1961 to 2.9 per cent in 1976-77.

The educational strategy in the Seventh Plan gives priority to elementary education for all children in the age group 6-11 and cent per cent enrolment of children in the age group 11-14. Adult literacy programme in the age group 15-35 also gets priority in the Seventh Plan particularly for males and females belonging to the Scheduled Castes and the Scheduled Tribes.

In higher education the main emphasis is given on the consolidation of the existing facilities, removal of basic infrastructural deficiencies and other short-comings. Greater emphasis is laid on post-graduate level research in practical problems associated with development projects.

(VIII) Health

In the beginning of the Third Plan there were 382 hospitals and dispensaries and 111 Primary Health Centres with a total bed strength of 4, 690. By the end of the Fifth Plan period the number of allopathic hospitals increased to 245 and the number of dispensaries increased to 322. In addition, there were 72 Medical Aid Centres in the state by the end of 1977-78. The doctor—population ratio improved to 1:9,648 in 1977-78 from 1:17,713 by the end of the Second Plan.

The Seventh Plan programme for health care have been formulated in accordance with the national policy of "Health for All by 2000 A. D." The number of Primary Health Centres is proposed to be increased to augment health care facilities in the rural areas. At present there are 334 Primary Health Centres and 4127 sub-centres. In the Seventh Plan 100 Primary Health Centres and 1413 sub-centres more are proposed to be added. For extending the benefits of homoeopathic and ayurvedic systems of medicine 15 homoeopathic and 15 ayurvedic dispensaries are proposed to be upgraded to the level of subsidiary health centres. According to the Health Guide Scheme started in 1977, 16, 999 Health Guides are provided with medicine kits to serve in the rural areas up to 1983-84.

Minimum Needs Programme

One of the important objectives of the Fifth Plan was to increase the consumption standard of the lowest 30 per cent of the people below poverty line. The objective was to be realised by emphasising on the Minimum Needs Programme which was implemented from 1974. The programme included old age pension, construction of rural roads, distribution of home-stead lands, housing schemes for the poor, drinking water facilities in the villages, agricultural programme, such as, soil conservation, soil improvement, etc., rural electrification and programmes for improving the nutritional standards of the poor, rural health and improvement of urban slums. An expenditure to the tune of Rs. 62.33 crores was incurred for the purpose during the period 1974-78. Out of the Sixth Plan outlay of Rs. 1570 crores, Rs. 137 crores were earmarked for the schemes under the Minimum Needs Programme. The following were the achievements made under the Minimum Needs Programme up to 1983-84.

(a) Rural Electrification—By the end of the First Plan period 64 small towns and villages were electrified. The number of additional villages electrified during the Second Plan period went up to 114. During the Third Plan period 418 additional villages received electrification and by the end of the Fourth Plan period, the total number of villages electrified reached 8,077, covering a population of 31.18 per cent. An additional number of 6084 villages were electrified during the Fifth Plan period under the Minimum Needs Programme. Thus it brought the total number of villages electrified to 14,161 and covered 50.89 per cent of the total population.

In the first four years of the Sixth Plan 5,289 villages were electrified. Thus by the end of March, 1984 the total number of villages electrified were 22, 520 which covered 70 per cent of the population of the state. Besides, 26, 391 pump sets were energised up to March, 1984.

(b) **Rural Water Supply**—With the objective of providing safe drinking water in 27,077 problem villages, this programme was drawn up. By the end of March 1984, 14,279 villages were fully covered either by tube-wells or open drinking water wells.

(c) **Distribution of House-sites**—The state had launched a massive programme of distribution of Government waste land, free of cost both for agriculture and for homestead purpose. By the end of March 1984, 17,233 acres of land suitable for house-sites were distributed to 2,74,535 families including 93,216 Scheduled Tribe families and 75,886 Scheduled Caste families.

(d) **Integrated Housing Scheme**—In addition to the provisions made for providing house-sites, an integrated housing scheme was taken up for providing built up houses at low cost to these people. In order to facilitate provision of approach roads, water supply, school and community centre these houses were constructed in colonies of about 20 houses preferably near the existing villages on *basti* sites. During the first four years (1980-81 to 1983-84) of the Sixth Plan 10,596 houses were constructed with an expenditure of Rs. 182.01 lakhs.

(e) **Elementary Education**—This programme aims at spreading elementary education for the age group 6-14 with special emphasis on female education. The target of enrolment of students in the age group 6-11 was fixed at 31.58 lakhs (19.05 boys and 12.53 girls) in the Sixth Plan against which 30.41 lakhs (18.43 boys and 11.98 girls) were enrolled in 1983-84 which was 90 per cent of the total child population. During the same period, the target of enrolment in the age group 11-14 was 7.17 lakhs (4.71 boys and 2.46 girls) against which 7.05 lakhs (4.62 boys and 2.43 girls) were enrolled.

In the field of adult education emphasis has also been laid on eradication of illiteracy among the adults in the age group 15—35. It was estimated that there were about 55 lakh illiterate persons in this age group in the state. During the Sixth Plan it was targeted for enrolment of 5.85 lakhs of which 1.59 lakh persons were enrolled.

In order to encourage enrolment of students at the elementary stage package of incentives like free supply of text books and writing materials, supply of free uniform and award for regular attendance, scholarship to girls and opening of Book Banks in Middle English schools were introduced under the Minimum Needs Programme.

(f) Rural Roads—An attempt was made during the Fifth Plan under the Minimum Needs Programme to provide all-weather communications to the identified villages having a population of 1500 or above. During the period 1974—78, about 2110.5 km. of roads could be provided at a cost of Rs. 15.32 crores.

During the Sixth Five Year Plan there was a backlog of 219 roads spilled over from the previous plan. In addition 96 rural roads which were taken up by the then Rural Engineering Organisation were also included for improvement. By 1982-83, all the 219 spill over roads have been completed along with 19 rural roads taken up during Sixth Plan period. During 1983-84, 53 numbers of rural roads and 59 arterial roads have been taken up for improvement. During the Sixth Plan period a total length of 2,612 km. roads have been completed. It has been possible to provide road communication to 950 villages having population of 1,500 and above and 60 villages having population of more than 1,000 according to Minimum Needs Programme standard.

(g) Rural Health—The Fifth Plan norm under the Minimum Needs Programme of rural health was the establishment of one Primary Health Centre (P.H.C.) for each Community Development Block and establishment of one sub-centre for every 10,000 population and provision of drugs at the rate of Rs. 12,000 per annum for each Primary Health Centre and Rs. 2,000 per annum for each sub-centre. During the Fifth Plan medicine grants at the above rate were provided to the already existing 314 Primary Health Centres and 942 sub-centres. 17 Primary Health Centres were upgraded and 309 Primary Health Centres were provided with staff quarters during the period. Besides, 131 Primary Health Centre buildings were provided with electrification by the end of 1977-78.

In the Sixth Plan 20 additional Primary Health Centres (P. H. C.) were established. Out of 314 P. H. Cs, existed before the Sixth Plan, 12 were upgraded with a provision of 30 beds in each P. H. C. All these Primary Health Centres were provided with specialists in paediatrics and gynaecology, necessary equipments, vehicles and staff quarters. Prior to the Sixth Plan, 50 Subsidiary Health Centres were existed in the state. During the Sixth Plan period, out of 100 targeted Subsidiary Health Centres, 87 were set up by the end of March 1984 by way of conversion of dispensaries. According to the norms prescribed by the Government of India, one sub-centre is required to be established for 5,000 population in rural areas and one for 3,000 population in tribal areas. As such, 5,540 sub-centres are required to be established in the state out of which 3,787 were set-up by the end of March 1984.

(h) **Improvement of Urban slums**—Environmental improvement in slum areas was taken up in the Fifth Plan period in Cuttack city only. Thirteen out of thirty identified slum pockets were covered with the improvements of link roads, supply of drinking water, public sanitary lavatories, electric light and other community facilities. In the Sixth Plan the target for improvement of slum population was 73,000 people out of which 28,350 slum people were covered during the first three years of the plan at an expenditure of rupees 45 lakhs. In 1983-84, the scheme was extended to other urban areas of Bhubaneswar, Sambalpur, Burla, Hirakud, Rourkela, Brahmapur, Puri, Jagatsinghapur, Jharsuguda, Baragarh, Kendraparha and Jajpur Road. During the Seventh Plan period an outlay of rupees three crores has been proposed for the programme with a target of covering 1.20 lakhs slum people.

(i) **Nutrition**—The Nutrition Programme under the Minimum Needs Programme provided supplementary nutritional feedings to 20.30 lakh beneficiaries consisting of pre-school children and expectant nursing mothers during 1984-85. The achievements under the immunisation programme in 1983-84 were 1,41,009 children.

Community Development and Panchayat Raj

By the end of the Third Plan period the entire state was covered by Community Development Blocks, numbering 314 in all. There were 2,350 Gram Panchayats in these Blocks covering a population of 136 lakhs in about 48,000 villages. Due to the reorganisation of Gram Panchayats during the Fourth Plan on the basis of reduced population coverage, 3,829 Gram Panchayats were constituted covering a population of 164.39 lakhs in 50,887 villages. At present there are 3,830 Gram Panchayats in the state.

In 1961, Panchayat Samitis and Zilla Parishads were established in the state at district and C. D. Block levels. Thus the Gram Panchayats, Panchayat Samitis and Zilla Parishads formed the three-tiers of Panchayat Raj set up in the state. The Zilla Parishads as constituted during 1961 had no power to execute any development work. Hence, in 1967 the Zilla Parishads were abolished.

Since the beginning of the 1st Plan, the C.D. Blocks were concentrating on developmental works mainly under agriculture, animal husbandry, irrigation, health and rural sanitation, education, social education, rural arts and crafts and communications.

During the Fourth Plan period the C.D. Blocks continued to be units of developmental administration at the village level. In order to alleviate the problem of unemployment and underemployment, a programme known as the Crash Scheme for Rural Employment was introduced during the 4th Plan period.

During the Fifth Plan period the responsibilities of C.D. Block machinery increased due to the implementation of Minimum Needs Programme, Crash Scheme for Rural Employment and the introduction of S. F. D. A./M. F. A. L. projects. Hence, steps are taken to strengthen the C.D. Block machinery by providing more staff and vehicles.

Future Prospects

After above 35 years of development planning, Orissa still remains as one of the economically backward states in the country. Although some significant developments have taken place in some sectors of the state economy, such as, agriculture, power, education, etc., bulk of the people of the state still remain poor. During the 15 years (1961—75) the state income of Orissa at the constant price of 1960-61 has increased at an annual rate of 3.8 per cent (compound), whereas *per capita* income at the constant price has gone up at the rate of 1.5 per cent annually. The growth rate of state income has been 4.6 in the Third Plan, 5.3 per cent during the three Annual Plans, 2.6 per cent in the Fourth Plan and 2.5 per cent in the Fifth Plan. Compared to the earlier plans, the growth rates during the Fourth and Fifth Plans have been low largely on account of relatively low levels of investment and inflationary price rise in the country which considerably eroded the real value of investments in the state.

The economic problems of the state can be briefly stated as low level of development, low *per capita* income, larger segment of population being below poverty line (defined as *per capita* consumption of Rs. 21.00 per month at 1960-61 prices), increasing gap in *per capita* income levels between all-India and Orissa, acute unemployment and under-employment.

The prospects of mitigating some of the problems and raising the level of development (even in limited *per capita* income terms) in Orissa to all-India level is a stupendous task.

The National Council of Applied Economic Research (NCAER), entrusted by the State Government of Orissa, prepared a perspective plan for the state over the decade, 1973-74 to 1983-84. In preparing the perspective plan, the NCAER seems to have realised that a mere rise in aggregate income would not solve all the pressing

problems of the state, such as, unemployment, poverty and low level of consumption or nutritional standard for the vast bulk of the people. The experience gained from all over the country during last so many years emphasises that there is no functional relationship between growth of income and distribution and welfare objectives. Therefore, a different approach was struck to achieve some reorientation in the plan with its emphasis on redistribution of objectives.

So far, long term planning in Orissa has been attempted with the help of two sectors growth models (or its minor variants) as utilised for India's Second Plan or the input-output and macro-economic growth models mostly in sectoral terms. Such models have their limitations for a state like Orissa with a vast segment of backward and poverty stricken population. Keeping this in mind the NCAER adopted a simple linear programme model for projecting optimum investment in different sectors in its perspective plan of 1974—84 under the given constraints. While determining the allocation of investment considerations such as reduction of inequality in the distribution of income, generation of employment opportunities specially among the rural and weaker sections of the community and improving the consumption standard of the people below poverty line were specifically kept in view.

Given those objectives, emphasis was required to be laid on the development of agriculture, household and small scale industries. These are the sectors which are labour intensive, relatively more capable of absorbing the unemployed and under-employed who are mostly unskilled or semi-skilled mostly on traditional lines. Those sectors also usually produce bulk of the wage goods (as much as 70 per cent of the wage goods needed by vast majority of people). For the purpose determining investment, the state economy was divided into six sectors, such as, (1) agriculture and allied activities, (2) household and small scale sectors, (3) mining and large industry, (4) generation and distribution of power, (5) transport and communication and (6) others.¹

On the basis of its linear programming exercise, the NCAER envisaged a total plan outlay of Rs. 3,241 crores over a period of ten years (1973—83). Of this total investment, 25 per cent was envisaged for agriculture and allied activities, about 10 per cent for the extension and improvement of the service sector, 2 per cent for increasing the production of small scale industries, 15 per cent for the development of power, 8 per cent for

1. For details of the exercise, see, Perspective Plan of Economic Development of Orissa, 1973-74 to 1983-84, Planning and Co-ordination Department, Government of Orissa, pp. 48-57.

extending and improving transport and communication facilities and the remaining slightly over 40 per cent for the development of mining and large industries. Additional income to be generated was estimated at Rs. 950 crores and employment generation would be a little more than 2.5 million.

However, the Fifth Plan outlay was finally approved at Rs. 588 crores by the Planning Commission, New Delhi, for the period 1974—79. During the early part of 1977-78, the need for a comprehensive reassessment of the state of development of the Indian economy was felt, in view of the rearrangement of priorities programmes and policies required for the next phase of development. The change of government at the Centre necessitated such a change and it was decided to terminate the Fifth Plan in March 1978 and to launch a medium term plan for 5 years, 1978-79 to 1982-83. During the four years of Fifth Plan, a total amount of 454 crores was spent in the state. Taking into account the Plan outlay of Rs. 191 crores for the year 1978-79 the total outlay for the Fifth Plan comes to an order of Rs. 645 crores.

The Sixth Plan of the state with an investment of Rs. 1,500 crores in the state sector has assumed a growth rate of 6.1 per cent to achieve a higher level of growth and reduce the gap between the national and the state *per capita* income. Special emphasis was laid on the plan on the improvement of agricultural production, expansion of irrigation facilities, development of industries, augmentation of employment opportunities and amelioration of poverty. No significant improvement may, however, be perceptible unless substantial higher investments are made to reduce unemployment and deliver greater benefits to the poor through enlarged access to social consumption. Generation of employment is, therefore, a chief requisite for the amelioration of poverty among the people. As stated in the Approach Document of Planning Commission, "instead of relying on general economic growth for raising employment opportunities without any special effort to give employment orientation to this growth, it is necessary to treat employment as a direct focal point of policy." The investment strategy in the Seventh Plan should, therefore, have to reckon with the need for providing employment to an unemployed work-force of about 24.5 lakhs. To fulfill the Seventh Plan objectives enunciated in the Approach Document, a growth rate of 5 per cent had been assumed at the national level. But, in a backward state like Orissa, it is necessary to aim at a higher rate of growth so that the state does not slide back in the economic scale.

It is estimated that the incremental capital out put ratio for the state in the Sixth Plan may be 4:1. If the estimates of investment in the Seventh Plan are worked out by applying this ratio to achieve a growth rate of 6 per cent during the plan period, the total investment by the terminal year of the plan should be of the order of Rs. 2,412 crores at 1970-71 prices. The outlay required for an investment of Rs. 2,412 crores would then be Rs. 2,822 crores on the basis of the outlay-investment ratio of 1.17:1. At 1984-85 prices, the outlay would work out to Rs. 10,526 crores which will result in an increase in the state *per capita* income and reduce the difference between the national and state income *per capita*. Taking into account the increase in population, the *per capita* income in the state in the terminal year of the Seventh Plan is likely to be of the order of Rs. 768 when the *per capita* national income would be about Rs. 85.00. The difference will thus be reduced from Rs. 151.8 in 1981-82 to Rs. 83.00 in 1989-90.

The proposed outlay of Rs. 10,526 crores also has a long term objective. If it materialises during 1985-90 the state will be capable for a higher rate of growth in the subsequent years.

For these modest objectives to be achieved, it requires not only the attainment of the contemplated growth rate but also a regional approach to the planning of the state. Such an approach requires the preparation of district plans, block plans and the identification of projects and the programmes at the village level with target population and production objectives. Planning at the lower level requires greater articulation of the socio-economic problems of the people and programmes should be specifically directed to solve them. Poverty eradication requires households to become the specific targets of programming. This requires professional expertise for undertaking planning exercises right from the state level to that of the village level and continuous monitoring of the plan.

CHAPTER VI

SOCIAL SERVICES

1. EDUCATION

A. Centres of learning in ancient and medieval Orissa

Propagation of different faiths formed the basis of education in ancient and medieval times in Orissa as in other parts of India. The Viharas or the monasteries were the educational institutions of the Buddhists and the Jains whereas the Maths were the centres of teaching of different branches of Brahminical Shastras. Bhubaneshwar is an eternal city with Buddhist monuments on the Dhauli hill on the south and Jain monuments on the Khandagiri and Udayagiri hills to the west, with magnificent Saiva temples in the centre ranging in date from the 3rd century B. C. to the 16th century A. D. In this city there was a Buddhist centre near the Dhauli hill which was known as Surabha Parbata. This centre was famous for teaching Yogas. From different translations of the famous Buddhist work, 'Gandavyuha' or 'Avatamsaka Sutra' written in the 3rd century A. D. we know of a famous Acharya named Sarvagami who was teaching Yoga to scholars coming from different parts of India.

Acharya Dingnaga, the founder of Buddhist Nyaya and the author of 'Pramana Samuchhaya' was the resident of a place not far from Tosali (Dhauri). Due to the spread of Brahminism Tosali lost its importance before the 7th century A. D.

The caves in the Khandagiri and Udayagiri formed the educational institutions of the Digamvara Jain community from the 2nd century B. C., up to the advent of the Gangas in the beginning of the 12th century A. D. In the Hathigumpha inscription of emperor Kharavela (1st century B. C.) in the Udayagiri hill, it is stated that the caves were dug for the residence of the Jain Sramanas (hermits) of Kalinga (Kalinganang samanang Lena). Of the Jain Sramanas of this long period, we know of two great Jain teachers named Acharya Kulachandra and his disciple Acharya Subhachandra from two inscriptions in the Khandagiri hill of the reign of Udyota Keshari. Acharya Subhachandra earned reputation as the author of Jnanarava, a treatise on Yogic observances. Bhubaneshwar became the greatest Saiva centre of Orissa from the 5th century A. D. The oldest Math of this place was Siddhesvara Math. During the Ganga rule two other Maths named Bharati Math and Sankarananda Math came to prominence. All these Maths were centres of learning.

Of the great scholars of this place we know of one Pramathacharya identified with Praparnacharya from an inscription of the 8th century A. D. found on the doorway of the Parasurameswar temple. One Bhava Sadasiva Guru was the preceptor of the great Narasimhadeva I (1238—64A.D.) which is known from three inscriptions in the Lingaraja temple of Bhubaneshwar. It is known from a bilingual inscription (Oriya and Tamil) that one Mahamuni Taparaja was the head of the Siddhesvara Math and after his death Tapa Chakravarti became its head. Saiva ascetics from far off lands like Chola and Kanchi were coming to this monastery for gaining knowledge of Saivic lore. The authors of works like 'Kapila Samhita' (କପିଳ ସଂହିତା), 'Saiva Chintamani', 'Ekamra Purana', 'Svsnadrlmahodaya' (ସ୍ବର୍ଣ୍ଣାଦ୍ର ମହୋଦୟ), 'Ekamra Chandrika', 'Saiva Kalpadruma' all belong to this place. Narayanananda Abadhutavsvami of the 15th century A. D. was a great Saiva teacher of this place who became famous for his work "Rudrasudhanidhi" (ରୁଦ୍ରସୁଧାନିଧି) written in the Oriya language of the period. After the advent of Sri Chaitanya, Bhubaneshwar was pushed to the background by Srikshetra or Puri.

Ratnagiri

The great Buddhist centre of learning was Ratnagiri, not far from Jajpur, the ruins of which have come to light after excavation by the Archaeological Survey of India. It was a great centre for teaching Yoga in India. Prajna, the great Buddhist scholar, gained mastery in Yoga at this centre. He was deputed to China by Raja Subhakara of Orissa with a copy of the Gandavyuha copied by the king himself and reached China in 795 A. D. The famous Acharya of this Yogic centre were Pitopada, Abadhuti, Bodhishri, Naro who all preached the Vajrajan cult of Buddhism. After the rise of Brahminism at Jajpur this Buddhist centre declined and was lost into oblivion.

Jajpur

The other name of Jajpur is Birajakshetra as goddess Biraja, a two-handed Durga, is the presiding deity of this place from the 5th century A.D. The capital of the imperial Bhauma kings of Orissa (circa 650—850 A.D.) was established at Guhesvara Pataka or Guhadeva Pataka near Birajakshetra which contained many Viharas and Maths. This place later on began to be called Yajnapura or Jajpur after which it became a great centre of Brahminical religion and learning in India. But the hoary antiquity of this place has been forever lost into oblivion due to reckless destruction of all the Brahminical institutions by repeated Muslim invasions.

We only know of a famous Buddhist scholar Mahamandalacharya Rahula who was patronised by the powerful Bhauma king Subhakar I (780-800 A.D.), from an inscription on an image of Avalokiteswar now preserved in the Jayadev Orissa State Museum. The forefathers of Sri Chaitanya, the great Vaishnav saint belonged to the Jajpur region before they migrated to Srihatta (Silhatt).

Cuttack

Cuttack which was called Varanasi Kataka or Abhinava Varanasi Kataka in the epigraphic records of the Ganga and Suryavamsi monarchs became a great centre of culture and education since the beginning of the 12th century A.D. and remains as such till today.

Great poets and scholars like Kavi Vidyadhara author of Ekavali, Kaviraja Narayan Das, Mahamahopadhyaya Chandi Das, Krushnananda Sandhivigrahika Mahapatra, Raghavananda Sandhivigrahika Mahapatra, Chandra Sekhar Sandhivigrahika Mahapatra and the famous Visvanath Kaviraj author of 'Sahitya Darpana' and other works lived here.

All the Suryavamsi monarchs were great patrons of learning. During their rule for about a century (1435—1535 A.D.) the royal court was adorned by great Pandits like Kavidindima Jivadeva Acharya, Kavichandra Raya Divakara Mishra, Kavi Chakravarti Markandeya Mishra, Lola Lakshmidhara Bhatta of the Andhra country, Rama Krushna Bhatta of Kasi and others. The last great scholar and poet of Cuttack was Krushna Das Badajena Mahapatra of the court of Gajapati Mukundadeva (1559—1568 A.D.) whose Gita Prakasha has remained an authority on Odissi dance and music. There was a temporary eclipse of the importance of Cuttack during the rule of the Muslims and the Marathas (1568—1803 A.D.). After the establishment of British rule in Orissa, Cuttack not only remained as the capital but also became the chief centre of culture and education in Orissa.

Srikshetra or Puri

Puri, known as Purushottama kshetra, Srikshetra, and Jagannath-Puri, was a centre of pilgrimage from very ancient times. The establishment of the Bhogovardhan Pitha by Bhagaban Sri Sankaracharya (788-828 A.D.) formed a landmark in the cultural history of Orissa. Sri Padmapadacharya, one of the four disciples of Sri Sankara was placed as the first spiritual head of this Pitha. After that there was a revival of Sanskrit learning and education in this area. The first great Sanskrit poet of this place was Murari Mishra whose drama 'Anargharaghava Natakam' was staged at the time of the car festival

of Lord Jagannath. Before the beginning of the Ganga period Satananda Acharya, born in the town of Puri became famous as a great astronomer and Smruti writer in India for his work, 'Bhasvati' (1099 A.D.) and other works.

The importance of Puri as an educational centre immensely increased in the twelfth century when Sri Ramanuja, Vishnu Swami, Madhavacharya, Ananda Tirtha and Acharya Nimvarka, the four great Vaishnav philosophers of southern India, established Maths at Puri which became great centres of teaching of their own faiths. Sri Jayadeva, the great Sanskrit poet of India, who also belonged to this area, established his Ashram at Puri and composed his immortal work 'Sri Gitagovindam' for recitation before Sri Jagadisha or Jagannath, the god of his devotion. Sridhara Swami (1350—1450 A.D.) who became well-known in India for his commentaries on Bhagavata and Bhagvat Geeta was the spiritual head of the Govardhana Math at Puri. Another equally famous scholar was Ananda Giri, a Mahanta of the Sankara Math of Puri who flourished in the reign of Narasimha II (1279—1306 A. D.). He was a prolific writer and enriched Sanskrit literature by writing several works on philosophy.

The great Smriti writers of Orissa like Sambhukara Bajapeyi (circa 1300) and his son Vidyakara Bajapeyi of Bharadwaja Gotra; Narasimha Mishra Bajapeyi, who was patronised by Gajapati Mukundadeva (1559—1568 A. D.), all had their own educational institutions at Puri.

Due to the stay of Shri Chaitanya for about 24 years (1509-1533 A. D.) till his death at Purushottamakshetra or Puri many scholars and saint-poets from Bengal and Orissa established their own Maths at this sacred place and imparted teaching of their own faiths in Sanskrit and in the regional languages like Oriya and Bengali. Vasudeva Sarvabhauma, Paramananda Sena and Kavi Karnapura were all disciples of Shri Chaitanya and wrote great works in Sanskrit. Among the Oriya saint-poets, five, namely, Balarama Das, Jagannath Das, Yosovanta Das, Ananta Das and Achyutananda Das flooded Oriya literature with their numerous poetical compositions.

The last great man of this place was Gadadhara Rajaguru (1715 A.D.) who wrote eighteen volumes on Dharma Shastra which are still followed in Orissa.

Parimalagiri

Parimalagiri has been satisfactorily identified with the Gandhamardana range standing on the border of Sambalpur and Balangir districts. Goutamiputra Satakarni (2nd century A. D.), the famous king of Andhra, dug out a big monastery in this hill for Nagarjuna, the founder of Mahayana branch of Buddhism.

Nagarjuna was a prolific writer and wrote many works on Mahayana Buddhism. A vivid description of this Vihara is found in the account of Hiuen Tsang. This was a great educational centre in western Orissa where hundreds of disciples studied this new form of Buddhism. Of his disciples, Arya Deva became famous for preaching Mahayana form of Buddhism in different parts of India.

There were also other cultural centres of lesser importance in different parts of Orissa. The first place that deserves mention in this connexion is Remuna in the northern part of Baleshwar district. It was the place of activity of the great Vaishnav scholar Sridhara Swami who was born in the village Mareigan near Remuna. Samananda and Rasikananda, the two great exponents of Vaishnavism, established Maths at this place. The great Oriya poet, Nilambar Das belonged to this place. Baladeva Vidyabhusana who became famous for his Govindabhasya on Brahmasutra was associated with this sacred place.

In south Orissa, in the Khemundi kingdom ruled by the Gavamsi chieftains, there were two centres of learning named Vijayanagar and Paralakhemundi where institutions were established for the teaching of Sanskrit, Oriya and music. Of the scholars associated with Paralakhemundi were Kaviratna Purushottama Mishra (circa 1650), an authority on music; Kavibhusana Gopinath Patra, poet Lokanath Tripathi, musician Kavichandra Raghunath Parichha, and the great Oriya poet Gopalkrishna Pattanaik. The rulers of Paralakhemundi were great patrons of learning and the town of Paralakhemundi still continues to be a famous centre of learning. Vijayanagar is another Ganga capital with which were associated Vasudeva Rath Somayaji (1762 A.D.), author of a historical Champu Kavya; Kavaraja Kesava Rath; poet Vrajasundar Pattanaik and his son poet Vakravak Chakrapani Pattanaik (1778).

Sambalpur

After the establishment of the capital of the Chauhan territory at Sambalpur during the middle of the 16th century A. D. it became the chief centre of education and culture in western Orissa. The Chauhan rulers built a large number of temples and Maths in their territory covering the present districts of Balangir, Sambalpur, Sundargarh and the eastern portion of the Raipur and the Bilaspur districts which were all centres of learning. The scholars of this area so far known to us include Kavi Gangadhar Mishra, author of the historical 'Kosalananda Mahakavyam' in Sanskrit (1615); poet Gopinath Sarangi, author of Chikitsa Manjari (circa 1660); Gopal Telenga (circa 1745), author of 'Adhyatmya Ramayana'; Prahallad Dubey (circa 1780), author of 'Jayachandrika' in Hindi; and Kandha Jose Das (circa 1800), author of 'Narasimha Mahatmya'.

B. Beginning of Western Education and Pioneering work done

The British effort to modernise Indian society led to the entry of new western ideas through several channels. Introduction of western education as the main agent of modernisation virtually revolutionised the intellectual life of the people. Modern Orissa like other regions of India, has inherited an educational system created and moulded by the British administration, since it came under the British rule in the year 1803. At the time of introducing the western system of education in different phases the foreign government carefully controlled the character and the contents of education to promote its own interest in the conquered country.

In pre-British days public instruction was not the concern of the state. In spite of many years of subjugation under the Mughals, the Afghans and the Marathas the Oriyas maintained an indigenous system of education. This system of great antiquity was self-supporting and independent of the educational system prevailing in Bengal. A simple society remained contented with the traditional teaching imparted in the 'Tols', 'Maktabs' and 'Chatasalis'. The East India Company's administration in its early days was indifferent to the promotion of education in the country as it was purely a commercial organisation. With the elaboration of the administrative machinery the objectives of the Government underwent transformation and that helped in the creation and formulation of an educational system for the diffusion of new learning. The Christian missionaries had done a pioneering job in this field.

Efforts beyond the traditional system of education emanated from the Christian missionaries. As pioneers of modern education in Orissa the missionaries of the General Baptist Mission soon after their arrival in Orissa on the 12th February, 1822 opened educational institutions obviously with an evangelical spirit. They worked for the promotion of both the Vernacular and the English languages and literatures. They started with English Sunday schools after morning service. Around 1823 they established fifteen elementary schools at Cuttack and the nearby areas. The first printing press was established by them at Cuttack in 1838. The Christian scriptures were translated into Oriya. Vernacular books also were prepared by the missionaries. In October, 1823 the Cuttack English Charity School was established. These educational institutions became centres of public contact for the missionaries. Modernisation of education was encouraged with a view to change the outlook of the people and to initiate them to Christianity. For converting the poorer section of the people to Christianity the missionaries after 1828 also opened orphan asylums with the subscriptions and donations received from the British Officers and the public. The activities of the missionaries were mostly

confined to the lower classes of the society, the upper classes remaining indifferent and hostile to the idea of education as a means of conversion. However, the contribution of eminent missionaries like W. Bampton, J. Peggs, C. Lacey, A. Sutton, J. Phillips, J. Stubbins, O. Bachelor and J. Buckley and their spouses to the beginning of western education in Orissa deserves commendation.

The British Government gradually realised that promotion of education was a part of its duty and it became the principal agent in the spread of the new system of instruction in the country. After assuming the responsibility of education of the people the Government in 1813 also began patronising the indigenous system of education prevalent in the country. The Oriya-speaking areas of the Madras Presidency were benefited by the policy of Sir Thomas Monroe. Around 1826 he encouraged the establishment of elementary schools in Vernacular known as 'Tahasildary schools'. The Oriyas under the Bengal Presidency were denied this opportunity as the Government of Bengal had no such scheme for mass education. However, after a prolonged controversy over the object, medium and method of education the minute of T.B. Macaulay was adopted by W.C. Bentinck in the year 1835. After this momentous decision promotion of western science and English education in the country became the guiding factor of the educational policy followed by the Government. English schools and colleges were established in different parts of the country in due course.

To avoid competition with the missionary efforts at Cuttack where the Baptists had established an English school earlier, the Government decided to open an English school at Puri. In 1835 necessary arrangements were made by W.Wilkinson, the Collector of Puri, to open the school in the office-*cum*-residence of the Sudder Ameen having accommodation for fifty students. Such efforts were baffled by the hostility of the local people and their aversion to English education. All attempts to attract the children of the people of Puri were frustrated. Only sons of the Bengali officers working at Puri attended the school. The British efforts to educate the upper classes in English could not be attained at Puri as it was not cordially received by the local people. The antipathy, conservatism and fear of conversion led to the decline and closure of the school.

After the initial set-back of the Puri English school the Government's attention was diverted to the English school at Cuttack run by the Baptist Mission for past seventeen years. It also failed to attract large number of students as the people

were afraid of conversion. The Cuttack School which remained for a long time the only institution of its kind between Vizagapatam and Calcutta was reconstituted as a Government institution in 1841 and was conducted as a Zilla School. The furniture and books belonging to the Puri School were made over to the Cuttack School. One hundred and fifty convicts assisted in erection of the school building. Here too the Bengali boys outnumbered the Oriya boys.

Unlike Puri the people of Balleshwar were more conscious about the advantages of English education, most probably due to its proximity to Bengal. The Government established an English School in Balleshwar in 1853 and revived the Puri School in the same year. The Sambalpur Zilla School established in 1852 was converted into an Anglo-Vernacular school around 1857 due to the indifference of the people for purely English education. Such was the coldness of the people to English education that the officiating Commissioner of Sambalpur made a recommendation in 1860 to establish a Vernacular school in place of the Anglo-Vernacular school. However, it was rejected by W. S. Atkinson, the Director of Public Instructions; otherwise the people of Sambalpur would have been deprived of the means of acquiring the English tongue and thereby qualifying themselves for public services. However, the initial resistance to western education gradually gave way as the people realised about the benefits of such education. Fear of conversion also wore off. These schools in course of time became secondary schools which formed an important branch of western education.

Mass Education

The emphasis on western education through English language resulted in the neglect of mass education. Due to the lack of a wider perspective and want of funds the British educational objective was confined to the creation of a class of loyal brown Englishmen in India. Much importance was attached to English education by Lord Hardinge's Resolution, 1844, by which preference was given in public employment to 'qualified youngmen from the various educational institutions'. The Oriyas could hardly take advantage of such an offer. The future of indigenous education was uncertain. Even the 'Tahasildary schools were closed in 1836 for want of official support. However, in 1844 by another order of Henry Hardinge, Vernacular schools imparting elementary education were opened in the Bengal Presidency. In Orissa, Government Vernacular schools were opened at Mahanga, Kendraparha, Hariharpur, Puri, Khorda, Balleshwar, Bhadrak and Remuna. Under unexpected circumstances this experiment in rural education in Orissa was to some extent frustrated by those who saw a threat to the economic interest which

depended on the continuance of the traditional system. Orissa continued her struggle in the grip of mediaevalism as the people were hostile to western education imparted in English and Vernacular schools established by the missionaries and the Government.

Against this background Wood's Despatch in 1854 ushered in a new era in the British educational effort. Education in the modern sense began and the objective underwent a radical change. The Government's interest shifted from the education of the upper classes in English to the education of the masses in vernacular. Increased attention to all forms of Vernacular schools for elementary education including the indigenous schools, introduction of a system of 'grant-in-aid' to private efforts, maintenance of existing Government schools, etc., were the chief measures adopted to promote general education. The Government started absorbing as many of the indigenous schools into the state system of primary education by the offer of pecuniary grants and official advice to improve their system of education. In Orissa the 'Chatasalis', the pre-existing indigenous institutions of the Hindus, in spite of their unprogressive character were more amenable to the influence of the educational policy of the Government because of their secular character. Private efforts were stimulated by the introduction of grant-in-aid to schools imparting secular education. The Government thus acquired the right to inspect subsidised schools. To influence the indigenous schools a Model Vernacular school was established by the Government in 1858. Depending upon the Orissa Division for supply of books and teachers the Madras Government opened Vernacular schools at Brahmapur and Russelkonda (Bhanjanagar) in 1855. Spread of western education in Oriya among the masses became easier due to the numerous pre-existing indigenous schools in general and the 'Chatasalis' in particular.

The result-grant system was introduced in Orissa in 1877. This system based on British Precedent and stimulated by the recommendation of the Hunter Commission, 1882, rewarded students and teachers of primary schools for successes achieved in the examination. It was substituted by quarterly subsistence in 1902-03. Thus primary education of the Britishers was not completely alien to the people. It developed on indigenous foundation. Western education in a systematic form started reaching the masses through the elementary schools. The Primary schools were transferred to the District Boards after 1885. However, the Government guided the policy, inspected through its own inspecting agency, prescribed curricula and provided aids. The traditional instruction gradually fell into disuse being unable to meet the modern requirements of the community.

Higher Education

The origin and growth of higher education in Orissa as elsewhere in India were closely linked with Bentinck's Resolution of 1835 that favoured higher education to the upper classes in English. This policy was not fully implemented in Orissa. Orissa had a few English schools only. Not a single college was established in Orissa during the rule of the East India Company. The belated effort of the Government to promote higher education in Orissa was confined to the establishment of one major educational institution, i.e., the Ravenshaw College. In 1841 the Government sanctioned a scholarship in the Hoogly Central College for students from the Cuttack school. The Oriya scholars declined such offer because of poverty and long distance from Orissa. Students having relatives in Calcutta could alone avail the scholarship. The Local Committee demanded a college at Cuttack. In the year 1864 H. L. Harrison, Officiating Inspector of Schools, South-West Division, suggested the establishment of college classes in Cuttack. T. E. Ravenshaw, the Officiating Commissioner, in 1866 insisted upon opening of a collegiate class in the Government school at Cuttack. W. S. Atkinson, the Director of Education, supported opening of a collegiate or High school at Cuttack as a preparatory step for the foundation of a college. With the opening of the first year of the college class in the old Zilla School at Cuttack it was converted into a High school in January 1868 with only six students on the roll. Higher education was a victim of the official misconception that the Oriyas had no aptitude for higher learning like Bengali neighbours. The Bengalis of Orissa took advantage of higher education and almost monopolised the government offices for a long time.

The conversion of the Cuttack Zilla School into a collegiate or High English school seemed to promise good results. In 1871 the number of Oriya boys in the college department increased to eight. To bring the advantages of the higher education within the reach of the students in all the parts of the Lower Provinces Sir Richard Temple sanctioned arrangement for raising the Cuttack School to the status of a fullfledged college. During the visit of the Lt. Governor to Cuttack the matter was brought to his notice by the people. The Lt. Governor was willing to raise the High school to a first grade college, provided a certain sum could be raised by private subscription. T. E. Ravenshaw, the Commissioner, and W. Atkinson, the Director, supported the experiment as the Oriyas were exposed to much disadvantages by their distance from the Presidency. On the 10th December, 1875 a copy of the minute by the Lt. Governor of Bengal dated the 27th April, 1875 on the proposal was submitted for consideration of the Governor-General in Council. The subscription locally raised also amounted to nearly Rs. 30,000, a sum sufficient to provide one-

half of the additional outlay for a period of at least five years. The Governor-General in Council sanctioned the proposal for three years on the understanding that it would not be renewed unless local contributions to the extent of Rs.500/— a month are permanently secured either from funded subscription or from fees. Thus the High English school was raised to a first grade college in 1876. The Maharaja of Mayurbhanj donated Rs.20,000/- as the nucleus of a permanent endowment and at his request the name of the college was changed to Ravenshaw College in commemoration of his services as Commissioner of Orissa. In 1921, the college was shifted to the present building built at a cost of ten lakhs of rupees on a land of 84½ acres.

Women's Education

While the education of women was not unknown in Orissa, it occupied less prominent a place in the traditional system due to peculiar problems arising out of social customs and conventions. Absence of a well defined policy for women's education also was a major defect of the British educational policy. The Education Despatch of 1854 was a break through in this field. The earliest effort to introduce western education among women of Orissa was made by the missionaries who put more emphasis on Christian-religious education. The success achieved in imparting education to daughters of the Christian converts and famine destitutes encouraged them to devote their attention to the education of non-Christian girls.

The female orphanages at Jaleshwar and Cuttack under the supervision of the mission received grant-in-aid from the Government in 1862. Oriya girls were also encouraged to join day schools run by the Christian missionary. In 1866-67 a school for the Europeans and Eurasians was opened at Cuttack in which many girls joined. These institutions were admirably conducted by Messrs. Buckley, Baily and Miss Guignard. Mrs. Smith's effort to extend the benefits of education to women behind the 'purdah' (zenana education) succeeded after a good deal of opposition. In April 1869 six families at Baleshwar volunteered to allow her to teach, and the experiment was extended to Bhadrak.

Rev. J. Phillips of the American Free Baptist Mission in his effort during 1872-73 to educate Santal girls at the Normal school Shantipore near Jaleshwar had a limited success. The Santal girls leaving school, fall back on a level with the mass of Santal women and appeared to make little or no effort to utilise their knowledge.

The Government encouraged women's education and established schools for women as and when there was persistent demand for the same from the public. In 1856 Gadadhar Bisoyi, a Chief of Ghumusar, overcame the prejudices of his class and sent his daughter to school. It was regarded as a significant development and the Government sanctioned establishment of four more schools in that area as it was feasible hereafter to introduce women's education. Officers with a progressive outlook also contributed substantially to the promotion of education among women with the help of the priestly caste who had so far been opposing the spread of western education. The Deputy Inspector of Schools with the help of Sudarshan Goswami Parichha, the store-keeper of the Bhubaneshwar temple, induced twelve 'Karan' girls to join boys' school at Bhubaneshwar in 1866. The people of Sambalpur evinced keen interest in women's education around 1868 because of personal influence of the Deputy Commissioner. Major Dods was of opinion that the people of Sambalpur were more intelligent than those of Central Provinces and the women would have outnumbered men in terms of enrolment had more schools been established. The British Government suspected the loyalty of the people of Sambalpur as this district was not free from rebels. The co-operation extended by the people in the spread of education against this background was encouraging. It was considered by the Britishers as a proof that 'old animosities had passed away and in their enlightenment they have some security for their continued loyalty'.

Some definite steps were taken by the Government to popularise women's education. Girls attended 'Chatasalis' as the society had more faith in 'Abadhans' than in others. The Government duly rewarded 'Abadhans' having girl students at the rate of six rupees a year for imparting education to the girls. This inducement, first tried at Puri, resulted in a steady increase in the enrolment of women students. Another wise step in this direction was to attract girls to mixed primary schools as co-education in primary stage was not opposed by parents. The policy of locating Vernacular schools in the urban rather than the rural setting yielded tangible results. Model primary schools for girls were also considered useful. The all-out effort for the promotion of women's education was confined to primary education only for a long time.

The most significant development in the promotion of western education among women of Orissa was the starting of the Cuttack Hindu Girls' School at the residence of Abinash Chatterji at Balubazar in Cuttack. Here unconsciously the real foundation of western education was laid in 1869. Started as a Lower

Primary school only with six girl students. it received aid from the Government and in 1873 it was named after the then illustrious Commissioner as the Ravenshaw Girls' School. Reba Ray also established another girls school at Kaligali which affected the strength of the former. For a long period the Bengali girls took advantage of the facilities. A handful of Oriya girls joined the Ravenshaw Girls' School. Due to the initiative taken by Utkal Gourab Madhusudan Das and his adopted daughter Sailabala Das, this sick institution flourished. After her return from abroad Miss Das succeeded in converting it to a High school in 1908-09. She induced students from the rural areas to join the school. It prospered. Reba Ray was persuaded for the amalgamation of her school with Ravenshaw Girls' School in 1909. Miss Sailabala Das, the honorary Lady Principal of the school, popularised western education among the women of Orissa. The Government took over the management of the Ravenshaw Girls' School on the 1st March, 1913. Unfortunately N. L. Hallward was opposed to the appointment of Miss Das as Lady Principal. Severe conflict arose between Miss Das and Miss Banerji, the Assistant Inspectress, temporarily in charge of the school. Due to these rifts which might possibly have retarded the progress of women's education in Orissa, Miss A. E. Bank, an English lady, was nominated as Lady Principal. To fulfil the aspiration of the Oriya women for higher education a decision was taken to add college classes to this school during 1915-16. It was a milestone in the promotion of women's education in Orissa.

To achieve better result in the field, the advantages of western education should have been explained properly to the parents of the Oriya girls. Moreover, the Government didn't maintain much difference in the educational curricula of the institutions meant for the boys and the girls. They were the same in primary, secondary and college level. Sufficient number of trained women teachers were not provided. Above all, the Government and the parents were more concerned with the education of the boys. In spite of the unequal growth of western education among the sexes such education started elevating the social status of the Oriya girls unknown in pre-British days.

Vocational Education

All early educational efforts of the British East India Company in Orissa were confined to general education alone. It was purely literary. The Oriyas were deprived of the facilities of vocational education enjoyed by their more fortunate neighbours. Due to distance, poverty and conservatism the Oriyas were reluctant to proceed to

Calcutta or Madras for vocational training. The Government of late realised these difficulties and took steps to establish vocational institutions in Orissa to train the Oriyas as doctors, engineers and teachers.

The Commissioner of Cuttack sent a proposal for the inclusion of students from Orissa to the stipendary list of the Bengali class of the Medical College and it was sanctioned in 1859. Only two stipends were provided. The Government entertained doubts regarding admission of sufficient number of students to the school when a proposal was placed before the Government for the establishment of a medical school in Orissa. It was also feared that the Oriyas would object to the practical anatomy and pathological post-mortem demonstrations. Hence the institution started as an experimental measure to ascertain whether the time had arrived for carrying out such a scheme, and whether it would be at all practicable.

However, the establishment of the Orissa Medical School was sanctioned in Government of Bengal Resolution No. 2697 of the 6th September, 1875. The initiatives taken in this regard by Ravenshaw, the Commissioner, and Dr. W. Stewart, the Civil Surgeon, were highly appreciated. The Commissioner frequently demanded for the foundation of a medical school for the benefit of the Oriyas. Dr. Stewart also displayed much interest in carrying out the scheme and offered to undertake the duties both of superintending and of instructing without extra remuneration.

The Lt. Governor promised to give a grant of Rs. 300 per annum in support of the school as the institution was an experimental one. This school was one of the five medical schools of the Bengal Presidency. To support the effort of the Government the Ruler of Mayurbhanj donated one thousand rupees. Lectures in the Orissa Medical School commenced on the 15th February, 1876. The Oriyas were placed on the same footing and advantage as the Bengalis and the Biharis. The courses of instruction was the same as that of the Campbell School of Medicines of Sealdah. Students were collected from the division of Orissa as well as its Feudatory States. The Government intended not to realise fees from the students at the first instance. Twenty stipends were provided by the Government and one was given by Rai Bahadur Baboo Baidya Nath Pandit. They were taught Anatomy, Physiology, Materia Medica and Chemistry, besides practical Anatomy and Pharmacology. Dr. Stewart, Civil Surgeon, Cuttack; and C. L. Das and Bijay Coomar Chakravarty, Assistant Surgeons were the teachers of this institution. The first batch of students appeared in the final examination in 1879.

The absence of competent lawyers was keenly felt around 1868. The local courts were manned by lawyers who had graduated from the Presidency College. No institution existed in Orissa to train the Oriyas for the legal profession. Sri Rungo Lall Banerjee, Secretary to the Cuttack Local Committee of Public Instruction, took the initiative in this matter. In 1868 he suggested to attach a Law class to the Cuttack High School. It was further suggested to appoint a Lecturer in Law on a monthly salary of 150 rupees. T. E. Ravenshaw, the officiating Commissioner of the Cuttack Division, strongly backed the proposal. His recommendation sent to the Secretary to the Government of Bengal was favourably considered. W. S. Atkinson, the then Director of Public Instructions sanctioned the appointment of a Lecturer in Law in the Cuttack High School on a salary of Rs. 150/- per month payable from surplus funds, provided they were sufficient to meet the charge. Immediate steps were also taken for the affiliation of the school to the University in the faculty of law. Thus the Law class held in Cuttack High School started from the 10th March, 1869. The pleadership class attached to the Cuttack High School could not provide adequate training for legal profession. The Bachelor of Law classes which were introduced in 1881 but discontinued in 1908 were reopened in 1920 in response to the demand of the people.

Prior to the opening of a Survey School at Cuttack only a survey class was attached to the Cuttack High School. The necessity of establishing a survey school was keenly felt by the people. It was part of the scheme of Technical Instruction for the people of Bengal. As a result of this scheme survey schools were opened at Dacca, and Cuttack in 1876. The establishment of such an institution at Cuttack was associated with the technical education of nearly one hundred famine orphans, under the charge of the missionaries. These boys were being trained as carpenters at the workshop at Jobra. G. H. Faulkner Executive Engineer, Cuttack Workshop Division, strongly recommended the establishment of a school connected with the workshop. Rev. W. Miller, Baptist Missionary; S. Ager, Headmaster, Cuttack High School; the Commissioner and the engineering officers were consulted before the opening of the only Survey School of Orissa imparting instructions in the Vernacular. The period of training was fixed at two years. The discontinuance of the survey class attached to the High School was proposed to save Rs. 107/- per month. The only available Vernacular book on survey was written by Dwarkanath Chakravarty. The curriculum included surveying, road making, estimating and mathematics. The Committee on Technical and Industrial Education that met at Ranchi in June 1914 considered the future of the school and recommended to raise its status. A scheme was drawn up by F. Walford, Inspector of Technical Schools, proposed to locate the survey school near the

P.W.D. Canal Workshop at Jobra. The Raja of Athgarh ex-state offered a sum of Rs.20,000/-towards the initial cost of the scheme to commemorate the Viceroy's visit to Cuttack. The proposed name of the institution was the Orissa School of Engineering. It was decided to recruit the Principal from London. The scheme for conversion of the Survey School at Cuttack to a School of Engineering proposed by the Government of Bihar and Orissa in 1916 was approved by the Government of India. Yet its implementation was delayed till 1923. The Orissa School of Engineering at last started functioning in 1923 to train sub-overseers. Later it was raised to the status of Civil Engineering Sub-ordinate standard in 1926.

The necessity of creation of a class of efficient teachers for the Government Vernacular schools was not felt so long as education of the masses was not a part of the British educational policy. In the indigenous system of education special institutions did not exist to train teachers. Prior to the establishment of an institution for this purpose, teachers to the Government Vernacular schools were being recruited through a public examination. Due to distance and poverty people avoided going to the Normal schools at Hoogly or Madras for teachership training. It was reported in 1857-58 that two ex-students of the Government Vernacular school at Khorda were offered scholarships of Rs.3/- a month to go to Hoogly Normal School. But they disappeared from village when the Government directed them to proceed. However, on the 29th July, 1863, W. S. Atkinson, the Director of Public Instructions, submitted a scheme as a temporary experimental arrangement for the sanction of the Lt. Governor. It was proposed to form a training class for the Oriya teachers at Cuttack under the superintendence of the Deputy Inspector of Schools, Puri. The monthly expenditure involved was Rs. 60/-. The scheme was sanctioned by the Lt. Governor in 1863 and the class started on the 1st September in the same year. The experiment proved a great success. It was reorganised in 1869 and as a Normal school was considered most useful for the spread of elementary education in Orissa. In Ganjam, the Madras Government opened Normal classes to supply teachers to the Hill schools of Ganjam. This was originally opened at Brahmapur Zilla School. And after a short sojourn at Asika, it was removed to Russelconda (now Bhanjanagar) by 1860 and continued there till the end of 1865. This removal was found necessary because of the unwillingness of the students to come so far from their homes. No students joined the class after 1864 due to the famine. It was revived in 1869. Establishment of Normal school at Sambalpur was proposed in 1869. Savings effected by the amalgamation of the Hoshungabad and Jubbulpore Normal

schools of the Central Provinces were utilised towards the maintenance of the Normal school at Sambalpur. In 1886 the Government sanctioned the establishment of a Normal school to be held for one year at each of the centres—Rayagarha, Jaypur and Gunupur in succession.

Besides making provision for training of elementary teachers, the Government made arrangement to train English teachers of secondary schools. In 1896 an English class was opened in the first grade Vernacular Training school at Cuttack for this purpose. That was considered inadequate. The Government of Bihar and Orissa proposed to establish the second Training College for English teachers of the province on lines similar to those of the Patna Training College. The scheme owing its origin to the Government of India's circular letter No. 813, dated the 30th August, 1916 was implemented in 1923. The Oriyas got a Training College at Cuttack to train secondary school teachers and inspecting officers.

Agricultural instruction was introduced in Orissa in the year 1905 and classes were taken in the Government High School at Cuttack. Strangely enough this education was discontinued in 1910 in a region where most of the people were farmers. The distance of the garden for practical classes was the ground for such a decision. Had the Government shown interest, the termination of this important branch of vocational education could have been avoided.

Education in Feudatory States

The impact of western education was not felt immediately in the ex-states after its introduction in the 'Mogulbandi' areas as the British Government was not directly involved in the administration of the feudatory states. The chiefs were primarily responsible for the education in their respective states. The Government ruled in 1906 that the Commissioner should be regarded as the local head of the Education Department. The Inspector of Schools was to act as his advisor in respect of education on the states. The Government offered free inspection. The Inspector inspected according to the instructions of the Commissioner. By their lavish contributions some enlightened rulers of the native states had also supported the British educational efforts in Orissa. Uniformity, however, could not be maintained in the introduction of western education in all the regions of Orissa as different parts of Orissa were under different administration.

Education among Tribal Communities

In 1837 the Government of Bengal instructed the Commissioner and Superintendent of Tributary Mahals, Cuttack, to curb the law-less habit of the tribal communities by the introduction of western education. A moral change by education was aimed at. The tribal people had no indigenous system of education of their own. They had no written character. So the Government adopted the policy of teaching

the tribals in their own language in Oriya character. The Government thus complemented the educational efforts already made by the missionaries among the tribals.

The Madras Government also established a few schools of a very elementary nature in the hill tracts of Ganjam prior to 1850 with a view to civilizing the tribal people of this region. But their isolation, dislike of settled occupation and their intense attachment to free life and aversion to education baffled the educational efforts. The Kondhs believed that education was associated with taxation. They withdrew their children lest they may be afflicted with diseases. In 1856 one Kondh parent agreed to permit his son to attend school on the 'express condition that the boy's name should not be recorded'. Around 1882 demand for schools in Kondh villages increased. Due to the interest evinced by the local Chiefs, and the Government officers, 902 boys and 103 girls were prosecuting their studies in fifteen schools in the Kondh region during this period. At Udayagiri a Kondh headmaster was also found teaching.

In other tribal areas suitable steps were taken to impart education. In 1886 the proposals of the Inspector of the First Division, Madras, for improving the schools in the Agency tract of Vizagapatam (Jaypur Zamindari) were sanctioned by the Government. Special schools were also established in the tributary states for the education of the tribal and the backward classes. These were the Santal schools at Mayurbhanj, the Bhuiyan school in Kendujhar and the Cess schools at Khondmals. During 1885-86 the death of the Santal inspecting Pandit was looked upon by the local people as a 'mark of displeasure of the offended gods'. Even in the beginning of the twentieth century the problems in this field were more conspicuous than achievements. It was alleged by J.G.D. Partridge, Agent to Governor in Ganjam in 1904 that the non-tribal students of Ganjam had taken advantage of the means of acquiring knowledge, while the Kondhs, Savaras and Panas had not developed any taste for learning. Moreover, Brahmin teachers discouraged Pana or Kondh boys to join training for fear of pollution. The 'Karan' teachers also were uninterested of any interference with their monopoly in the Baligurha division. Means were suggested by J.C. Molany, Special Assistant Agent, Baligurha Division in 1904 to promote education. He suggested that grant of a few Kondh scholarships of Re. 1 per month be funded. Jobs to educated Kondhs was also another means. To attract the Kutiya Kondhs 'half a day school' was suggested as fear of wild animals on their way back and utilisation of their help in cattle rearing were the main objections of their parents.

On the 7th January, 1905 a conference was held at Chhatrapur, Ganjam, to suggest for the improvement of education in the Agency tract of Ganjam and Vizagapatam. The Government approved of some of the recommendations. These were instruction of hill tribes in their mother-tongue, evening classes for adults, liberalisation of grant-in-aid rules, rewards for regular attendance in schools, preference to men taught in the Hill schools in employment and introduction of manual training. The effort of M. R. Rao., G. V. Rammurti to instruct the Savara students in the Telugu medium was rejected as the Government proposed that the medium of instruction among the hill tribes was to be their mother-tongue or Oriya. The educational facilities enjoyed by the Savara pupils, such as, scholarships in Government primary schools were extended to the Parajas or the Jatapus and the Gadabas.

In March 1907 the Government proposed to teach the art of weaving to the Gonds of Sambalpur. Sanction was accorded to the scheme as an experiment only for one year. The school provided quarters for twelve trainees with their families. The teacher was a Brahmin. The experiment was a success. It was placed on a permanent basis with effect from the 1st April, 1912.

A scheme was formulated in 1907 by R. T. Greer, Commissioner of the Orissa Division, for the education of the Panas, one of the depressed classes living in the tributary states of Orissa and in the districts of Cuttack, Puri, Balleshwar and Anugul. To elevate the Panas from their degraded social status it was proposed to provide them with primary education free of cost. Rulers of the feudatory states were persuaded to open at least one school each in their states. It was reported in 1913 that thirty-seven special schools for the Panas were opened in the feudatory states, the pupils numbering 1310 of whom the Panas were 1063 and the rest belonged to other depressed castes. In ordinary schools of the ex-states, 2417 Panas were also studying. In Anugul thirty-five Pana schools were being maintained. In the Khondmal subdivision the Pana children attended schools meant for Kondhs and for other castes. Three Pana teachers were in charge of three Kondh Schools. For the Mogulbandi areas it was proposed to allow a capitation grant of annas four (Re. 0.25) per head for every Pana girl and annas two (Re. 0.12) for every Pana boy above the number of five in any school. The Government was opposed to denial of admission of depressed caste students on ground of caste to institutions maintained at the cost of the public. Establishment of special schools for the depressed caste children were encouraged in the localities where sufficient number of such children were available to form a school.

After an initial setback the distrust of western education wore off and different facets of western education were successfully introduced in Orissa. The delay in the implementation of the British educational measures in Orissa were due to its remoteness from Calcutta and Madras and insufficient attention paid to the needs of the Oriyas. Despite several shortcomings and slow progress of western education in Orissa, it paved the way for further achievements in the field. This western system of education inculcated and nurtured the spirit of modernism in the minds of the Oriyas.

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C. Literacy and Educational Standard

The state of Orissa does not stand on a better footing as far literacy is concerned and the reasons are not far to seek. As per the Census of 1971 nearly 39 per cent of the total population of the state belonged to the Scheduled Castes (15.09 per cent) and the Scheduled Tribes (23.11 per cent) who had in the past little aptitude for education. Lack of adequate facilities for promoting education, lack of communication and lack of consistent efforts on the part of the foreign government were mainly responsible for retarding the growth of literacy in Orissa. It is only after the independence of India that sincere efforts were made to improve literacy in this country. Only 15 per cent of the total population of the state were returned as literate as per the Census of 1951. This figure rose to 21.7 per cent in 1961 which again increased to 26.2 per cent in 1971 and 34 per cent in 1981. This indicates that there have been a consistent growth of literacy in the state in the post-independence period.

Generally persons belonging to the age group of 0-4 are excluded from the total population while calculating literacy. The table given below deals with a comparative study of the growth of literacy in the state of Orissa as per the Censuses of 1951, 1961 and 1971 (excluding age group 0-4).

(1)	Percentage of literacy			Growth in the percentage of literacy		
	1951*	1961	1971	1951-61	1961-71	1951-71
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Person ..	12.57	25.24	30.53	100.8	20.96	142.88
Male ..	20.62	40.26	44.50	95.25	10.53	115.81
Female ..	4.55	10.12	16.29	122.42	60.97	258.02

**Figures based on 10 per cent sample*

Among the thirteen districts in Orissa, Cuttack with a percentage of 36.4 topped the list of literacy while Koraput with 10.6 per cent of literacy came last according to the Census of 1971. More than half of the total number of districts in the state, like Balangir, Ganjam, Kalahandi, Kendujhar, Koraput, Mayurbhanj and Phulabani fell short of the state average of 26.2 per cent in the field of acquiring literacy. According to 1981 Census Report, Puri had the highest literacy rate having 45.71 per cent followed by Cuttack with 45.33 per cent. Koraput continues to have the lowest rate having 15.83 per cent only.

The total number of persons in the state returned as literate as per the Census of 1951 was 2,313,413 of whom 1,978,705 were males and 334,726 females. The number of literates in the state, however, increased to 3,801,245 comprising 3,042,004 men and 759,241 women according to the Census of 1961. Of the total literates, 3,221,268 (2,542,427 males and 678,841 females) were literate without any educational level, 465,672 (393,117 males and 72,555 females) had education up to Primary or Junior Basic standard and 114,305 (106,460 males and 8,845 females) were either matriculates or above. In the following decades the number of literate increased further.

The table below shows the number of literates by educational standard in the state of Orissa in the urban and the rural areas as per the Census of 1971.

Educational Standard	Number of Literates			
	Rural		Urban	
	Male	Female	Male	Female
(1)	(2)	(3)	(4)	(5)
Literate (without educational levels)	5,27,417	1,69,144	1,94,959	1,36,085
Primary	22,60,471	8,94,622	1,02,640	68,042
Middle School Standard	6,54,106	1,34,432	1,46,149	70,582
Matriculation or Higher Secondary	1,53,345	11,924	1,14,438	23,519
Non-technical Diploma or Certificate not equal to Degree	12,279	1,160	205	30
Technical Diploma or Certificate not equal to Degree	4,251	151	3,736	65
Graduate and above	16,458	1,424	37,352	6,413

Orissa had registered a literate population of 8,964,625 during 1981 Census. Out of the total literates 6,216,037 are males and 2,748,588 females. The literacy rate of Orissa in 1981 is 34.12 as compared to 26.18 per cent in 1971.*

Spread of education among Backward Classes and Tribes

Orissa occupies a unique position in India on account of high proportion of the Scheduled Tribes and the Scheduled Castes in her population. According to the Census of 1971 the percentage of the Scheduled Tribes and the Scheduled Castes stood at 23.11 and 15.08 respectively and these two groups constituted a little over 38 per cent of the total population of the state. Most of the Scheduled Tribes people were living in

*Census of India, 1981, Series-16 Orissa, Provisional Population Totals

the inaccessible hilly tracts where no light of civilization could reach. They had little scope of education. During the British rule some steps were taken by the British Government to open a few schools exclusively for the education of these people, but this did not bring any noticeable change among them. The apathy of the Scheduled Tribes towards education was also partly responsible for this. It is only after independence that sincere efforts were made by the Government for the economic and educational development of these people. New schools were established and various facilities were provided for the education of the tribal children. Separate institutions, such as, Chhatasalis, Sevashrams, Ashram schools (Kanyashram for girls) and High English schools were opened in the pockets predominantly inhabited by the backward tribes and castes. In 1979-80 the Harijan and Tribal Welfare Department maintained 52 Ashram schools including 10 for girls, 84 High English schools including 20 for girls, 42 residential Sevashrams, 84 Chhatasalis and 1,011 hostels for the spread of education among the Scheduled Castes and the Scheduled Tribes. In the residential institutions free lodging and fooding facilities are available to the students and reading and writing materials are supplied to them free of cost. This apart, the Scheduled Tribes and the Scheduled Castes students who study in other educational institutions along with the general students get lump grants and stipends. Seats in the colleges are also reserved for the students belonging to these groups. These facilities have brought about perceptible changes in the attitude of the backward classes and tribes towards education. Their strength in the schools and colleges have increased considerably. From a report published by the Directorate of Public Instructions, Orissa, it is known that towards the end of 1978, 3.73 lakh Scheduled Castes children (2.46 lakh boys and 1.27 lakh girls) and 4.54 lakhs Scheduled Tribes children (3.15 lakh boys and 1.39 lakh girls) were studying in the Primary school stage in the state. At the Middle English school stage the number of Scheduled Castes and Scheduled Tribes students were 0.39 lakh (0.31 lakh boys and 0.08 lakh girls) and 0.37 lakh (0.30 lakh boys and 0.07 lakh girls) respectively. The total number of enrolment of the Scheduled Castes and the Scheduled Tribes students at the Secondary school stage stood at 0.22 lakh (0.19 lakh boys and 0.03 lakh girls) and 0.21 lakh (0.18 lakh boys and 0.03 lakh girls) respectively, the percentage on enrolment being 8.66 for the Scheduled Castes (14.39 for boys and 2.46 for girls) and 5.65 for the Scheduled Tribes (9.5 for boys and 1.59 for girls). In the colleges and the universities there were about 3,000 Scheduled Castes and 2,000 Scheduled Tribes students.

Consequent upon the measures taken by the government the percentage of literacy among the Scheduled Castes and the Scheduled Tribes has gradually gone up. According to 1961 Census the percentage of literacy among the Scheduled Castes and the Scheduled Tribes was 11.6 and 7.4 respectively which had increased to 15.6 and 9.5 respectively in 1971 Census. The percentage of literacy among the Scheduled Castes people is more than that of the Scheduled Tribes.

The following table shows a comparative statement of the growth of literacy in Orissa as per the Census of 1961 and 1971.

Population	Percentage of Literacy					
	1961			1971		
	Male	Female	Total	Male	Female	Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)
General ..	34.7	8.6	21.7	38.3	13.9	26.2
Scheduled Castes ..	19.8	3.4	11.6	26.0	5.2	15.6
Scheduled Tribes ..	13.0	1.8	7.4	16.4	2.6	9.5

With a view to streamline the spread of education in the disadvantageous pockets and to raise the level of literacy among the backward communities of the state, a special Sub-plan strategy has been launched since 1974-75 under which the general programme meant for the tribal areas is supplemented by a number of special schemes tailored to the needs and real-life condition of the tribal children. In order to confer special benefits on the the Sub-plan areas the general norms and yardsticks have been relaxed and special institutions, such as, residential Ashram Schools and Pre-primary centres have been opened.

D. General Education

Primary

When Orissa emerged as a separate province in the year 1936 there were altogether 7,567 Primary schools in the state. The expansion of primary education in the state was rapid after independence. In 1948-49, there were 9,218 Primary schools with a student strength of 4,20,410. Thereafter, growth of Primary education in the state has been quite encouraging. By 1977-78, the total number of Primary schools in the state increased to 32,027 of which 1,681 schools were opened in the backward areas and were maintained by the Harijan and Tribal Welfare Department and the rest were managed mostly by the local bodies. Ninety-five per cent of the total

number of Primary schools were located in the rural areas. Till the year 1974-75 nearly 50 per cent of the Primary schools continued to be three-class schools and since then they have been upgraded to five-class schools. In recent years some of the Primary schools have been upgraded to Middle English school standard and continue to be under the management of the local bodies like the Panchayat Samitis. During the year 1979-80 the total number of Primary schools in the state stood at 32,103. The total number of students and teachers were 26·8 lakhs (16·22 lakh boys and 10·58 lakh girls) and 78,319 (71,266 males and 7,053 females) respectively. In 1988-89 there were 39,293 Primary schools in the state and the total enrolment in these schools was 35·02 lakhs.

The table given below shows the development of primary education in Orissa from the year 1947-48 to 1977-78.

Year (1)	No. of Primary Schools		
	Boys (2)	Girls (3)	Total (4)
1947-48 ..	6,622	192	6,814
1950-51 ..	9,582	219	9,801
1955-56 ..	14,160	219	14,379
1960-61 ..	21,606	252	21,858
1965-66 ..	24,810	267	25,077
1969-70 ..	26,303	251	26,554
1973-74 ..	31,573	249	31,822
1977-78 ..	31,811	216	32,027

(Contd.)

No. of Teachers			No. of Pupils (in lakhs)		
Males (5)	Females (6)	Total (7)	Boys (8)	Girls (9)	Total (10)
16,260	260	16,520	2·46	0·09	2·55
16,208	317	16,525	2·51	0·64	3·15
23,194	390	23,584	3·35	0·97	4·32
36,514	814	37,328	9·89	4·40	14·29
47,165	2,279	49,444	11·51	5·98	17·49
52,419	2,854	55,273	11·95	6·31	18·26
64,601	3,999	68,600	14·36	8·32	22·69
69,840	6,060	75,900	16·56	10·32	26·88

(Concl.)

By 1984-85, 34,465 Primary schools are functioning in the state. Spread of Primary (elementary) education constitutes one of the national programmes for minimum needs (M. N. P.) as it essentially an investment in human resource development (H.R.D.). The programme initiated from the Fifth Five Year Plan aims at spread of universal elementary education for the age group of 6—14 years with special emphasis on girls. The 6th Plan target for enrolment for the age group 6—11 was fixed at 35.58 lakhs and for the age group 11-14 was fixed at 6.92 lakhs. To achieve this goal, field officers and all Primary school teachers were instructed to motivate the guardians of the non-attending children to send their children to the school. The 6th Plan target has substantially been achieved.

Middle English Schools

In the year 1947-48 there were 286 Middle English schools in the state of which 30 were meant for girls. It is only after independence that sincere steps were taken by the Government to enlarge the scope of Middle school education. Gradually more and more schools were opened in different parts of the state. In 1950-51, the total number of Middle English schools increased to 501 of which 468 were for boys and 33 for girls. Towards 1960-61 the number of such schools rose to 1,307 (1,212 for boys and 95 for girls) which further boosted up to 4,047 towards the end of the sixties. In the year 1979-80 there were 7,274 Middle English schools in the state of which only 468 institutions were run by the Government and the rest 6,806 were either aided or privately managed. The number of students in these institutions has also undergone spectacular change ever since the achievement of independence. In the year 1947-48 there were altogether, 0.32 lakh students (0.30 lakh boys and 0.02 lakh girls) in the Middle English schools which increased to 5.43 lakhs (3.71 lakh boys and 1.72 lakh girls) by 1979-80.*

*Towards 1988-89 the number of Middle English schools rose to 9,125 and the number of pupils went up to 9.70 lakhs.

The table given below shows the growth of Middle English education in the state from 1947-48 to 1977-78

Year (1)	No. of Middle English Schools		
	Boys (2)	Girls (3)	Total (4)
1947-48	256	30	286
1950-51	468	33	501
1955-56	644	44	688
1960-61	1,212	95	1,307
1965-66	2,983	327	3,310
1969-70	3,985	62	4,047
1973-74	4,584	58	4,642
1977-78	6,469	74	6,543

(Contd.)

No. of Teachers			No. of Students enrolled (in lakhs)		
Male (5)	Female (6)	Total (7)	Boys (8)	Girls (9)	Total (10)
1,393	90	1,483	0.30	0.02	0.32
2,414	155	2,569	0.37	0.03	0.40
2,996	201	3,197	0.49	0.04	0.53
5,235	352	5,587	0.95	0.12	1.07
10,435	966	11,401	2.06	0.45	2.51
13,455	502	13,957	2.48	0.70	3.18
61,316	656	16,972	2.62	0.98	3.60
19,774	1,634	21,408	3.23	1.36	4.59

(Conclid.)

High English Schools

The number of High English schools in Orissa stood at 106 in the year 1947-48 of which 7 were exclusively meant for girls. The number increased to 107 in the year 1950-51 with no change in the number of institutions meant for girls. Thereafter, there has been gradual development in the field of secondary education in the state and the number of students in these institutions is increasing spectacularly every year. The number of Secondary schools rose to 452 in 1960-61 and to 1,543 in 1969-70. In 1947-48 there were 0.15 lakh students in these institutions and their number increased to 0.44 lakh in 1960-61 and to 1.71 lakhs in 1969-70. After independence the number of Secondary schools increased rapidly under private initiative, besides the schools established by the Government. In 1979-80* the total number of Secondary schools in the state was 2,260 of which 441 were managed by the Government and the rest 1,819 were aided or privately managed.

*During 1988-89 the number of Secondary schools rose to 4,239 and that of the students to 7.66 lakhs.

The table given below shows the growth of High English school education in Orissa from the year 1947-48 to 1977-78.

Year (1)	No. of High English schools		
	Boys (2)	Girls (3)	Total (4)
1947-48	99	7	106
1950-51	165	7	172
1955-56	245	13	258
1960-61	418	34	452
1965-66	936	92	1,028
1969-70	1,359	184	1,543
1973-74	1,654	204	1,858
1977-78	1,825	205	2,030

(Contd.)

No. of Teachers			No. of Students (in lakhs)		
Males (5)	Females (6)	Total (7)	Boys (8)	Girls (9)	Total (10)
1,414	91	1,505	0.14	0.01	0.15
2,125	122	2,247	0.15	0.01	0.16
2,737	213	2,950	0.22	0.02	0.24
4,448	375	4,823	0.40	0.04	0.44
8,512	787	9,299	0.90	0.11	1.01
14,091	1,770	15,861	1.45	0.26	1.71
14,259	1,800	16,059	1.57	0.37	1.94
18,044	2,626	20,670	1.86	0.59	2.45

(Concl.)

In recent years the 10 (+) system of education has been introduced in the High school stage in Orissa as in the case with the other states of India. The Board of Secondary Education, Orissa, Cuttack, conducts the High School Certificate Examination of the state.

Colleges

Spread of higher education in Orissa was at the lowest ebb as it would be evident from the fact that till the end of the 19th century there were only three colleges in the state. The first institution to provide higher education in the state was the Ravenshaw College, Cuttack founded in the year 1875. The other two colleges, viz., the Khallikote College, Brahmapur, and the Maharaja's College, Paralakhemundi (redesignated as the Maharaja Krushna Chandra Gajapati College) were established in the year 1878 and 1894 respectively. It would not be out of place to mention that the Maharajas of Mayurbhanj, Paralakhemundi and Khallikot made laudable contributions to the spread of higher education among the Oriyas. After the creation of the Utkal University in 1943 more colleges started opening in Orissa. In the

year 1947-48 the number of colleges in the state increased to 12 including one for women. Since then more and more colleges are coming up every year. Towards 1960-61, the number of colleges in the state rose to 29 including 4 for women. It further increased to 77 (8 for women) by 1969-70. Most of these institutions grew under private initiative. In the year 1978-79 there were altogether 92 colleges in the state (some being managed by the Government and some aided by the Government but managed privately). Of the total number of 92 colleges 10 were exclusively meant for women. The total strength of students and teachers in these colleges were 84,344 (68,439 boys and 15,905 girls) and 4,086 (3,409 males and 677 females) respectively. By 1980-81, the number of colleges had increased to 189 including 17 colleges for women and the total strength of students and teachers were 92,000 and 4,710 respectively. This apart, a number of colleges have been started in different parts of the state under the initiative of the local people which are yet to be recognised by the Government. In 1988-89 the state had 433 general colleges in which 2.6 lakh students were reading.

The table given below shows the growth of higher education (non-technical) in the state from the year 1947-48 to 1977-78.

Year (1)	No. of Colleges		
	Males (2)	Females (3)	Total (4)
1947-48	11	1	12
1950-51	13	1	14
1955-56	13	1	14
1960-61	25	4	29
1965-66	55	7	62
1969-70	69	8	77
1977-78	82	10	92

(Contd.)

No. of Teachers			No. of Students		
Males (5)	Females (6)	Total (7)	Males (8)	Females (9)	Total (10)
251	17	268	3,885	219	4,104
278	20	298	5,893	389	6,282
333	22	355	5,400	515	5,915
596	60	656	9,939	1,200	11,139
1,362	170	1,532	20,492	2,966	23,458
1,869	291	2,160	36,180	5,610	41,790
3,406	621	4,027	65,031	14,112	79,143

(Concl.)

Universities

There are now five universities in Orissa, namely, the Utkal University, Bhubaneswar; the Sambalpur University, Burla; the Berhampur University, Brahmapur; the Orissa University of Agriculture and Technology, Bhubaneswar and the Sri Jagannath Sanskrit Vishwavidyalaya, Puri.

Utkal University

After the creation of Orissa as a separate province in 1936, the establishment of a separate university for the province was keenly felt. Committees were set up to examine the case and ultimately the Utkal University Act was passed by the Orissa Legislature on the 20th June, 1943 and the Utkal University came into being in the same year. Prior to the establishment of this university, for the purpose of higher education, the areas constituting the present state of Orissa were at first under two universities, viz., Calcutta and Madras. The portion controlled by the Calcutta University was later on transferred to the Patna University and the portion which was under the jurisdiction of the Madras University was placed under the Andhra University. The Utkal University had its jurisdiction over the entire state of Orissa till 1967 when two more universities were established, one at Sambalpur and the other at Brahmapur (Ganjam). The jurisdiction of the Utkal University has since been delimited to the districts of Cuttack, Puri, Baleswar, Mayurbhanj, Kendujhar and Dhenkanal (except the subdivision of Athamallik).

Initially started as an affiliating-cum-examining university with only 5 colleges under its jurisdiction, the institution has risen to the status of a full-fledged teaching-cum-affiliating university. It had (before 1967) 113 affiliated colleges which included 3 Medical Colleges, 4 Law Colleges, 8 Teachers' Training Colleges, 1 Accountancy and Management College and 97 colleges in Arts, Science and Commerce under its administration. The university had six faculties, namely, Arts, Science, Commerce, Education, Law and Medicine. By 1980-81 the university had post-graduate departments in 21 subjects, namely, Analytical and Applied Economics, Anthropology, Botany, Chemistry, Commerce, English, Geography, Geology, History, Labour Welfare, Law, Mathematics, Oriya, Philosophy, Physics, Political Science, Psychology, Sanskrit, Sociology, Statistics and Zoology. It also had the provision for teaching foreign languages like Russian and German. Correspondence course for providing instruction to the students all over the state for extra-institutional study at the degree level both in Arts and Commerce has been started since 1975 under this university. During 1980-81 there were 2,428 students

(1,603 males and 825 females) of all categories (regular, casual and M. Phil.) in the post-graduate teaching departments of the university. The university provided six hostels, four for men and two for women for the accommodation of the students. The hostels accommodated 920 boy students and 281 girl students in the year 1980-81. The teaching staff of the university during the same year figured at 163 (144 males and 19 females).

Sambalpur University

For promoting higher education in the western part of Orissa a university at Sambalpur came into being with effect from the 1st January, 1967 by an Act of the Orissa Legislative Assembly. The jurisdiction of the university comprises the districts of Sambalpur, Sundargarh, Balangir and Kalahandi, and the subdivisions of Boudh of the Phulabani district and Athamallik of the Dhenkanal district. Started as an affiliating-*cum*-examining university on the 1st January, 1967, it has developed as a full-fledged affiliating-*cum*-teaching university from the year 1969. The university was shifted to Jyoti Vihar, the newly constructed university campus 20 km. away from Sambalpur town in 1972. In 1980-81 it had seven faculties, viz., Arts, Science, Commerce, Engineering, Medicine, Law and Education. So far (1980-81) 42 colleges were affiliated to it including one Medical College, two Engineering Colleges, one Law College, two Teachers' Training Colleges and 37 Colleges providing general education in Arts, Science and Commerce. The university imparted post-graduate teaching in 14 subjects like Anthropology and Sociology, Biological Science, Chemistry, Economics, English, History, Home Science, Indian Culture, Library and Information Science, Mathematics, Oriya, Political Science, Physics and Statistics. There were 857 students (606 males and 251 females) and 68 teachers (63 males and 5 females) in the teaching departments of the university during 1979-80. The university had 3 men's hostels and one women's hostel with a strength of 500 and 200 boarders respectively.

The university has also a museum with valuable collections of old palm-leaf manuscripts, old coins and various specimens of historical and archaeological importance. The museum is attached to the Department of History.

Berhampur University

The Berhampur University was founded on the 2nd January, 1967. The jurisdiction of the university extends over the districts of Koraput, Ganjam and Phulabani (except the subdivision of Boudh). The university complex at Bhanja Vihar

is at a distance of about 12 km. from the Brahmapur city. The university had six faculties, viz., Arts, Science, Commerce, Law, Medicine and Education and there was provision for post-graduate teachings in the subjects like, Botany, Chemistry, Commerce, Economics, English, History, Labour and Social Welfare, Marine Science, Mathematics, Oriya, Political Science, Physics and Zoology. The number of colleges affiliated to this university was 20 including one Medical College, one Law College, one Teachers' Training College and 17 colleges imparting general education in Arts, Science and Commerce subjects. Besides, the university provided Diploma course in Journalism and Mass communication. During 1979-80 there were 598 students (507 men and 88 women) studying in the post-graduate teaching departments of the university. The university provided hostel facilities for 250 male students and 50 female students.

Orissa University of Agriculture and Technology

The Orissa University of Agriculture and Technology, Bhubaneswar came into being in 1961 by an Act passed by the Orissa Legislative Assembly and it started functioning from the academic session 1962-63. The object of the university is three-fold, namely, teaching, research and extension. It aims at making provision for the education of the rural folk of Orissa in agriculture and promotes research and field and extension programmes in agriculture and agricultural production. The university has three faculties, viz., Agriculture, Veterinary Science and Animal Husbandry, and Agricultural Engineering and Technology. It had four constituent colleges, namely, the College of Agriculture, the College of Veterinary Science and Animal Husbandry, the College of Agriculture Engineering and Technology, and the College of Basic Science and Humanities.

The university awards Doctor of Philosophy (Ph. D.) degree to candidates for research works in the fields of Agriculture, Veterinary Science and Animal Husbandry, etc. It is a teaching-cum-residential University and has six hostels to accommodate 1,200 students.

The College of Basic Science and Humanities, started in the year 1963, provides education up to degree standard in Science. During 1979-80 there were 347 students in the college.

Shri Jagannath Sanskrit Vishvavidyalaya

The long cherished hopes and aspirations of the Sanskrit loving people of Orissa was materialised when the Government of Orissa with the help of an ordinance established the Shri Jagannath Sanskrit Vishvavidyalaya at Puri, the seat of Sanskrit learning

and culture, with effect from the 7th July, 1981. The university is third of its kind in India. The university was functioning with its office in the premises of the Raj Bhawan at Puri. From the session, i.e., 1981-82, it was decided to introduce teaching facilities in six subjects, namely, Dharma Shastra, Sahitya, Vyakarana, Sarvadarshana, Vedanta and Nyaya.

E. Professional And Technical Education

There are two* Engineering Colleges in Orissa, viz., the University College of Engineering, Burla, started in the year 1956; and the Regional College of Engineering, Rourkela; inaugurated on the 15th August, 1969. These colleges provide teaching facility up to post-graduate level in Civil, Mechanical, Electrical, Chemical and Metallurgical engineering courses. The Regional College of Engineering, Rourkela, besides its regular engineering courses, also provides post-graduate teaching facilities in subjects like Physics, Chemistry and Mathematics.

To cater to the needs of qualified Agricultural Engineers in the state, the College of Agricultural Engineering and Technology was established in the year 1966 at Bhubaneswar. It provides teaching up to Bachelor Degree in Science in Agricultural Engineering and Technology. During 1979-80 the college had 210 students and 9 teachers.

The number of engineering schools and polytechnics in the state was 8. They were Orissa School of Engineering, Cuttack; Brahmapur Engineering School, Brahmapur; Jharsuguda Engineering School, Jharsuguda; Orissa School of Mining Engineering, Kendujhar; U. G. I. E., Rourkela; S. K. D. A. V. Polytechnic (for women) Rourkela; Women Polytechnic, Bhubaneswar; and Leather Polytechnic, Rayagarha. These institutes impart training in 17 disciplines. The intake capacity of all these institutes was 897. There were also four other technical institutes-namely, Training-cum-Production Centre, Junagarh; P. C. I. I., Baripada; H. S. S. S. T., Asika; and H. S. S. S. T., Chaudwar. Besides, there were 12 Vocational Training Institutes (including one for women) popularly known as I. T. I. with a total number of 4,180 seats. These institutes provide vocational training in 25 trades. These training institutes are located one each at Rourkela, Brahmapur, Hirakud, Baleswar, Barbil, Takatpur, Puri, Bhawanipatna, Talcher, Ambaguda and two at Cuttack (including one for women).

* Now there are 3 more engineering colleges, two at Bhubaneswar and one at Sarang.

Medical Science

There are three medical colleges in the state. These are the Sriram Chandra Bhanja Medical College, Cuttack; the Vir Surendra Sai Medical College, Burla (Sambalpur); and the Maharaja Krushna Chandra Gajapati Medical College, Brahmapur (Ganjam); established during the year 1944-45, 1959-60 and 1962-63 respectively. In Orissa, previously there was only one Medical School at Cuttack which was upgraded to the status of a college. Post-graduate teachings in various subjects are made available in all these institutions. The intake capacity of each college was 100 students in M.B.,B.S. course. There were 5 hostels including one for women in the Shriram Chandra Bhanja Medical College, Cuttack; 7 including one for women in the Vir Surendra Sai Medical College, Burla; and 4 including one for women in the Maharaja Krushna Chandra Gajapati Medical College, Brahmapur. The total number of teaching staff in all the three medical colleges was 450 in 1978-79.

The table given below shows the number of successful candidates who came out of these institutions during the years 1973-74 to 1977-78.

Name of the College (1)	Number of successful students				
	1973-74 (2)	1974-75 (3)	1975-76 (4)	1976-77 (5)	1977-78 (6)
1. S.C.B. Medical College, Cuttack	166	187	187	190	159
2. V.S.S. Medical College, Burla	178	171	141	139	51
3. M. K. C. G. Medical College, Brahmapur	120	106	81	36	93
Total	464	464	409	365	303

Besides medical education, these Medical Colleges impart training in different branches of medical science. Provision for training of Laboratory Technicians in the S. C. B. Medical College, Cuttack; the V. S. S. Medical College, Burla; and the M. K. C. G. Medical College, Brahmapur; was made from the year 1974, 1979 and 1974 respectively. This is a Certificate course of one year duration. Matriculation is the minimum qualification for admission to this course. During 1979-80, 90 trainees were given training in these centres.

The 2-year Diploma course in Pharmacy has been started in the S. C. B. Medical College, Cuttack, since 1958. Candidates having Matriculation qualification are eligible for admission. During 1979-80 the strength of the trainees was 60 and that of the teachers 6.

18-month Diploma course for Dental Technicians was opened in the year 1979 in the S. C. B. Medical College, Cuttack. Later on a degree course in Dental Surgery has been introduced. Intermediate qualification (+2) in science is essential for this course.

Training in Certificate course in General Nursing and Midwifery is available in all the three medical colleges in the state. The course is of $3\frac{1}{2}$ years duration. The minimum academic qualification required for the trainees is Matriculation. In 1979-80 there were 539 trainees instructed by 25 Sister Tutors and 6 Public Health Nurses.

One and a half years Certificate course for Health Workers (female) has been started since 1979 in the hospitals located at Sundargarh, Dhenkanal, Deogarh, Kendraparha, Kendujhar, Jajpur, Sakhigopal, Phulabani and Bhawanipatna. All the trainees are required to be matriculates. During 1979-80, there were altogether 95 trainees in these 9 Health Workers' Training Centres and the teaching staff in the same year in these centres was 50.

A. N. M. Training centres are functioning at Jaypur, Baripada and Balangir from the year 1956. Middle English school education is the minimum qualification for admission into this 2-year Certificate course. During 1979-80 the number of trainees and Instructresses in these centres was 320 and 66 respectively.

In the state there are one Homeopathic Medical College at Bhubaneswar and two Ayurvedic Medical Colleges of Government located at Puri and Balangir. The intake capacity of each of these medical institutions is 25. The colleges impart education in Degree and Post-graduate courses.

There were 4 Law Colleges in the state, namely, the Madhusudan Law College, Cuttack, the Law College, Bhubaneswar, under the Utkal University; the Lala Lajpat Rai Law College, Sambalpur under Sambalpur University; and the Lingaraj Law College, Brahmapur under the Berhampur University. In recent years some new law colleges have been established at Bhubaneswar, Cuttack, Baleswar, Baripada, Rourkela and Anandapur under local initiative. Post-graduate classes in Law have been started in the law colleges at Cuttack, Sambalpur and Brahmapur.

Educational Training

There were six* Government Training Colleges in Orissa to impart pre-service and in-service training to the teachers. These institutions are the Radhanath Training College, Cuttack; the Government Training College, Sambalpur; the Government Training College, Brahmapur; the Government Training College, Balangir; the Government Training College, Anugul; and the Government Training College, Baleswar. During 1979-80 these institutions had 924 trainees. The Radhanath Training College, the oldest institution among all, was established in the year 1923. The rest of the colleges have been opened in the post-independence era. This apart, there is the Regional College of Education at Bhubaneswar which was established in the year 1963. It is run by the National Council of Education, Research and Training. All these colleges impart training for the Bachelor's Degree in Education and the training college at Cuttack and Sambalpur and the Regional College at Bhubaneswar provide post-graduate teaching in Education. Besides normal B.Ed. course, the Regional College of Education runs a correspondence- cum- contact course and also organises short-term orientation programmes. The State Institute of Education and the Board of Secondary Education, Orissa, also organise short- term orientation programmes for in-service teachers.

For Secondary level training, there were in the state, 70 Secondary Training schools of which 15 were exclusively meant for women candidates. The intake capacity of each school was 50 in the year 1979-80. The course is of two-year duration after which the successful candidates are awarded Certificates of Teachership by the Board of Secondary Education Orissa.

There were two training institutes for imparting training to the in-service Hindi teachers. These are the Hindi Training Institute, Cuttack; and the Hindi Teachers' Training College, Bhubaneswar, established in the years 1956 and 1965 respectively. The institutes conduct a ten-month certificate course in Hindi.

*In the meantime three more such institutions have been established one each at Bhubaneswar, Koraput and Bhanjanagar.

College of Agriculture

The college of Agriculture under the Orissa University of Agriculture and Technology was established in the year 1954. It provides education up to Bachelor of Science (Agriculture) and Master of Science (Agriculture) courses. The students and teachers strength of the institution in 1979-80 was 710 and 54 respectively.

College of Veterinary Science and Animal Husbandry

The College of Veterinary Science and Animal Husbandry under the Orissa University of Agriculture and Technology was started in 1963. It imparts education leading to degree and post-graduate degree in Veterinary Science and Animal Husbandry. It had 212 students and 45 teachers during 1979-80.

Physical Education

There is only one college in the state for the promotion of physical education, namely, the Government College of Physical Education, Cuttack, established in the year 1957 where both men and women candidates are admitted for the training course. The college offers Certificate as well as Degree course in Physical Education. The annual intake capacity of the institution was 150. During 1979-80 it had 138 men and 12 women trainees and 6 teachers including one lady Junior Instructress.

Institute of Physics

The Institute of Physics, Bhubaneshwar, started functioning on the 4th September, 1974 with the joining of a full-time Director. The institute aimed to (i) promote research in all branches of physics and allied disciplines, (ii) to provide training in advanced physics beyond the post-graduate level, (iii) to collaborate with other institutions for raising the level of physics teaching and research, and (iv) to provide technical consultancy to educational institutions and industries. At present research is conducted in the fields of theoretical high energy physics, solid state physics, atomic physics and nuclear physics. The institute offers Diploma course, popularly known as pre-doctoral course in Advanced Physics, for 15 scholars. There is provision for 20 doctoral fellowships. It conducts symposia on different occasions. The institute is an autonomous one and is managed by a Board of Governors, the Director being its member-secretary. The Governors are nominated in consultation with the University Grants Commission, the Atomic Energy Commission, the Space Research Establishment and the Ministry of Defence. It is financed by the Government of Orissa.

Eastern Regional Language Centre

The Eastern Regional Language Centre at Bhubaneshwar was started in July 1970. The centre conducts a ten-month course in the Assamese, Bengali and Oriya languages up to Matriculation standard. It also imparts second language training to the Graduate teachers of High English schools, Higher Secondary schools and Junior colleges sponsored by the concerned states. The institute is affiliated to the Central Institute of Indian Languages, Karnataka. It is managed and financed by the Ministry of Human Resource Development, Government of India.

F. Schools for Cultivation of Fine Arts, Music, Dance, Paintings, etc.

With a view to encourage and promote study and research in painting, sculpture, architecture and applied arts in the state of Orissa the Lalita Kala Akademi at Bhubaneshwar was constituted. The organisation was registered on the 29th July, 1971. Many eminent artists and scholars of Orissa, both official and non-official are its members.

For the promotion of fine arts and crafts the Government School of Arts and Crafts at Khallikot in the district of Ganjam was established in 1957. It offers 5-year degree course in fine arts and crafts imparting training in painting, sculpture, applied arts, graphic arts, commercial arts and other traditional crafts. The intake capacity of the school is 30 in each class. The institution is managed by the Government of Orissa and it has been affiliated to the Berhampur University since 1979-80.

The Bikram School of Arts and Crafts, Jaypur, in the district of Koraput offers Certificate courses in drawing, painting, stone-carving and wood-carving, dance, and music. It had 48 students (including 33 girls) and 3 teachers in 1978-79. It is an old institution established in the year 1946. Besides, there are other institutions in the state like the Charukala Parishad, Bhubaneshwar; the Cuttack College of Art and Craft, Cuttack; the Silpi Sangha, Bhawanipatna; A. M. E., Bhubaneshwar; the Ganjam District Drawing Masters' Association, Brahmapur; etc. for imparting training in various arts and crafts. All these institutions are privately managed.

The Bibhuti Kanungo College of Arts and Crafts, Bhubaneshwar, established in 1984, conducts a 5-year Degree course in Arts and Crafts.

For maintaining and developing its traditional music, dance and drama, Orissa has a number of institutions throughout the state. There is a college of music, dance and drama at Bhubaneshwar named Utkal Sangeet Mahavidyalaya. Established in the year 1964, it imparts 6-year Acharya course in music and dance, and two-year Diploma

course in dramatics. During 1979-80 the college had 240 students (150 men and 90 women) and 29 teachers (23 males and 6 females). The Kala Vikash Kendra at Cuttack, a leading institution for imparting education in music, dance and dramaturgy was established in the year 1952. In 1978-79, there were 341 students in this institution. The National Music College at Cuttack, run by the National Music Association, Cuttack, is one of the oldest institution of its kind in the state. It was started in the year 1943. The college had 114 students in 1978-79. A list of such other institutions of importance in the state as they existed in the year 1978-79 is given in Appendix I of this Chapter.

G. Oriental School and College

The contribution of Orissa to the cause of Sanskrit learning is great. Puri, the seat of Lord Jagannath, has been a famous centre of learning since remote past. There are some important Maths or religious monasteries at Puri which maintained Sanskrit Tols for the propagation of Sanskrit learning. Sanskrit is taught as a subject in High schools and colleges. Besides, there were 145 Sanskrit Tols all over the state for the propagation of Sanskrit education which included Primary or Prathama Tols, Middle or Madhyama Tols and higher Tols which teach Sanskrit up to Acharya level. The Prathama, Madhyama, and the Acharya courses in Sanskrit are of 3 years, 6 years and 10 years duration respectively. During the year 1979-80, the number of students studying in all these institutions was 3,959 (3,005 boys and 954 girls).

For higher education in Sanskrit there is a Sanskrit College at Puri named the Shri Sadasiva Kendriya Sanskrit Vidyapeetha. This institution was established in 1865 as a school and was raised to the status of a college in 1918. Now it imparts education up to Acharya stage in Sanskrit. It provides three hostels for the accommodation of the students.

A separate Sanskrit University named the Shri Jagannath Sanskrit Vishvavidyalaya has been established at Puri since 1981 for the propagation of Sanskrit learning and culture.

H. Education for the Handicapped

There are three educational institutions in the state specially meant for the handicapped students, viz., the Deaf and Dumb school and the Blind school both located at Bhubaneswar and the Blind school at Burla in the district of Sambalpur. The Deaf and Dumb school was established in the year 1937. It is managed by the Orissa State Council of Child Welfare. It provided education up to class VII. The Blind school at Bhubaneswar started in the year 1960, imparts teaching up to Class XI. The Blind school

at Burla offers education up to Class VII. All of them are residential institutions and during the year 1979-80, 199 handicapped students (164 boys and 35 girls) were imparted teaching in all these institutions by 35 teachers (25 males and 10 females). Another school for deaf, dumb and blind is also functioning at Brahmapur.

I. Adult Literacy

Adult literacy featured as a regular social educational programme of the State Government in the year 1949. At the initial stage the programme was fostered by the Education Department as well as the Community Development Department. Now it is implemented mainly by the Education Department through the funds provided by the State Government as well as the Central Government; the voluntary agencies who get financial assistance up to 85 per cent of their total expenditure from the Government of India; the Nehru Yubak Kendras, who get full financial assistance from the Central Government and by the volunteers of the National Service Scheme of colleges and universities who get funds for the purpose from the University Grants Commission. The programme undertaken by the Education Department is headed by an Additional Director of Public Instructions. Under normal literacy programme, in each district there were 50 literacy centres in each of which 20 adults were enrolled for a period of six months. Primary school teachers work as part-time instructors in these centres and are paid some additional remuneration for this. Literacy drive is undertaken through another scheme called the Functional Literacy Programme launched in the year 1970-71. It is fully financed by Government of India. The programme is in operation in six districts. Twenty centres are functioning in each district and a number of 30 adults are enrolled in each centre for a period of ten months. A scheme under the Non-formal Education Programme for adults belonging to the age group of 15—35 was launched in the year 1976-77 in three districts with Central assistance and in three other districts with the assistance of the State Government. One hundred Non-formal centres have been opened in each district and 30 adults are enrolled for a period of eight months in each of these centres. It had been proposed in the draft Sixth Five Year Plan to cover 45 lakhs of illiterate adults out of the 55 lakh illiterate adults in the age group 15-35.

The adult education programme is basically an educational approach within an out-of-school context which bases its programme on the participant's needs, and these needs are aimed to be fulfilled by harnessing the existing resource and by providing minimum facilities which are not existent. The programme is undertaken mainly with a view to imparting literary skill, upgradation of functional skill and generation of

awareness among its clientele. During the year 1979-80 there were 9,056 adult literacy centres (7,397 for men and 1,659 for women) maintained both by the Central and the State Governments where the number of beneficiaries were 3,06,056 (2,21,329 males and 84,727 females). 204 centres were run by the Nehru Yubak Kendras with 9,247 beneficiaries (7,029 males and 2,218 females). 161 centres were conducted by the National Service scheme units of the colleges and the number of beneficiaries were 4,534. Through other voluntary agencies 480 centres, with 13,950 beneficiaries were functioning.

Eradication of illiteracy among the adults in the age group of 15—35 is also one of the main components of Minimum Needs Programme. It is estimated that there are about 55 lakh illiterate persons in the state in the age group of 15—35 who can be made literate. By the end of 1984-85 about 2.10 lakh learners have been covered and the balance are proposed to be covered during the 7th Plan period. This Programme is under operation purely on functional basis. 3,900 centres were operating in 1982-83 enrolling 1.17 lakh adults. The number of centres increased to 4,500 in 1983-84 and it was proposed to raise the number to 6,850 in 1984-85 including 3,900 in the central sector.

J. Educational and scientific societies, Educational endowments

A number of literary, cultural and educational organisations function in different parts of the state right from the villages to the town and cities. These organisations mainly aim at promoting literary and cultural activities and provide a forum for social and cultural get-together. These societies organise literary and cultural meetings, symposia, felicitate eminent poets, writers and scholars on different occasions, celebrate the birth day of eminent litterateurs and other distinguished persons, conduct literary competitions, publish magazines and periodicals, and also at times undertake publication of books by local authors. Dramas, one-act plays and music competitions are also organised by these societies. The number of such societies in the state registered under the Societies Registration Act, 1860 till June 1980 was 18,840. Of these cultural societies the Utkal Sahitya Samaj, Cuttack, the Brajamohan Sahitya Samiti, Bhawanipatna (established in 1945); Khariel Sahitya Samiti, Khariel (established in 1947); Fakir Mohan Sahitya Parishad, Baleshwar (established in 1948); Ekamra Sahitya Sansad, Bhubaneshwar and Godavarish Sahitya Sansad, Bhubaneshwar are comparatively old and function till today.

K. Library

Libraries play an important role in the socio-cultural life of the people. They help in diffusion of knowledge among the masses. With the spread of education the number of libraries and reading rooms in the state has increased considerably. Almost all the educational institutions including schools, colleges and the universities have their own libraries. Besides, libraries and reading rooms have sprung up in almost all the towns and villages, mostly on public initiative, which provide intellectual recreation to both young and old.

The Kanika Library of the Ravenshaw Collage, Cúttack is one of the oldest libraries in Orissa. Among other important libraries in the state mention may be made of the following :

1. The Raghunandan Library, Puri
2. The Utkal Sahitya Samaj Library, Cuttack
3. The Padhiari Pathagar, Cuttack
4. The Silver Jubilee Library, Baripada
5. The Board of Revenue Library and Archives, Cuttack
6. The Orissa Secretariat Library, Bhubaneswar
7. The Orissa Legislative Assembly Library, Bhubaneswar
8. The Harekrushna Mahtab State Library, Bhubaneswar
9. The Jayadev Orissa State Museum Library, Bhubaneswar
10. The Library attached to the State Archives Bhubaneswar
11. The Ramkrishna Mission Library, Puri
12. The Ramakrishna Mission Library, Bhubaneswar
13. The Ispat Central Library, Rourkela
14. The Banchhanidhi Pathagar, Udaypur, Puri
15. Municipality Library, Brahmapur, Ganjam
16. Soochana Bhavan Library, Bhubaneswar
17. C. R. R. I. Library Bidyadharpur, Cuttack

This apart, the Information and Public Relations Department of the State Government also maintains Library-cum-Reading Rooms at several places in the state.

Archives

The Orissa State Archives located at Bhubaneshwar was instituted in the year 1960. It is a repository of non-current records of importance for administrative use as well as for historical research. Collection and preservation of old records are the main function of the Archives. It has a good reference library containing a number of rare and valuable books and periodicals to cater to the needs of the interested persons and research scholars. The organisation is under the administrative control of the Director of Cultural Affairs, Government of Orissa, and is managed under the direct supervision of Superintendent of Archives.

L. Newspapers and Periodicals

Before the advent of the printing press to Orissa, a handwritten periodical named 'Kujibar Patra' (କୁଜିବାର ପତ୍ର) published from the village Kujibar of the Cuttack district was in circulation. The periodical which was written on paper or palm-leaves covered articles on Hindu and Christian religions, education, hygiene, agriculture, commerce, music, etc. Portions of the periodical were translated into English and sent abroad by the missionaries to be published in the 'Baptist Journal' of England. This paper was brought out by one Sadhu Sundar Das.

The credit of publishing the first printed Oriya periodical named, Jnanaruna (ଜ୍ଞାନରୁଣ) goes to Rev. Lecey. In 1849 this periodical was published under his editorship and was in circulation for a brief period. The second Oriya magazine to be published was "Arunodaya" (ଅରୁଣୋଦୟ) under the auspices of the Christian Missionaries. Both these periodicals were chiefly meant for propagating Christian religion.

With the aim of bringing to light the sufferings of the Oriyas during the Great Famine of 1866, late Gourisankar Ray published the "Utkal Dipika" (ଉତ୍କଳ ଦୀପିକା) from Cuttack. For the publication of this newspaper he established the Cuttack Printing Company with the help of some of his friends. This periodical covered articles and news items relating to the then social, political and economic conditions of Orissa and had continued to exert great influence on Oriya public life for long 70 years.

In 1868, another periodical, titled "Balashwar Sambad Bahika" (ବାଲେଶ୍ଵର ସମ୍ବାଦ ବାହିକା) started publication from Balashwar under the editorship of late Fakir Mohan Senapati, the Father of modern Oriya fiction, and late Govind Chandra Patnaik. It started as a monthly and was converted to a fortnightly and then a weekly. In the same year "Utkal Hiteisini" (ଉତ୍କଳ ହିତୈଷିନୀ) appeared from Cuttack with late Kalipada Banerjee as its editor.

A literary magazine named "Utkal Darpana" (ଉତ୍କଳ ଦର୍ପଣ) was published from Baleshwar in 1873 under the patronage of Raja Baikunthanath Dey. This magazine, which was in circulation for a brief period, apart from serialising some early writings of the famous Oriya poet Radhanath Ray, also published many poems of Madhusudan Rao, the great devotional poet of Orissa.

During 1889, the then Ruling Chief of Bamra, Sir Basudev Sudhal Dev, patronised the publication of a weekly called "Sambalpur Hitei-sini" (ସମ୍ବଲପୁର ହିତୈଷିନୀ) from the ex-state of Bamra. Late Pandit Nilamani Vidyaratna was the reputed editor of this paper.

Among other important periodicals published in Orissa in the late 19th century which had significant contributions to the Oriya social life and literature mention may be made of "Utkal Putra" (ଉତ୍କଳ ପୁତ୍ର) edited by late Pyari Mohan Acharya, "Sanskaraka" (ସଂସ୍କାରକ) edited by late Chaturbhuja Patnaik, "Siksha Bandhu" (ଶିକ୍ଷା ବନ୍ଧୁ) and "Dharma Bodhini" (ଧର୍ମ ବୋଧିନୀ) both published from Baleshwar by the saint-poet Madhusudan Rao.

The publication of a monthly magazine named "Utkal Prabha" (ଉତ୍କଳ ପ୍ରଭା) in 1891 under the patronage of late Maharaja Shri Rama Chandra Bhanja of Mayurbhanj did a lot for the development of Oriya literature. This magazine which was covering articles mainly on literature, history, philosophy, science, politics and religion encourages writers by offering prizes to the best contributors. The first Oriya magazine for women named "Asha" (ଆଶା) was published in 1892 under the editorship of late Reba Ray. During 1893 "Indradhanu" (ଉଦ୍ଧୂଧନୁ) from Cuttack and "Bijuli" (ବିଜୁଳି) from Bamra were published. Bijuli took up the cause of old Oriya literature by supporting Upendra Bhanja's works and "Indradhanu" took up the cause of contemporary Oriya literature by criticising Upendra Bhanja. This literary controversy had enlivened contemporary literary atmosphere of Orissa to a considerable extent. The "Utkal Sahitya" (ଉତ୍କଳ ସାହିତ୍ୟ), a literary monthly made its debut in 1897 under the able editorship of late Biswanath Kar. Modern Oriya literature owes much to this literary periodicals.

In the last two decades of the 19th century three English periodicals, viz., "the Orissa Student" (1886), "the Orissa Patriot" (1888) and "the Ganjam News" (1896) were known to have been in circulation. This apart, a number of other periodicals in Oriya covering different branches of knowledge were also published.

During the first two decades of this century two literary magazines, viz., "Mukura" (ମୁକୁର) (1905) edited by late Brajasundar Das from Cuttack and "Satyavadi" (ସତ୍ୟବାଦୀ) (1914) edited by

late Pandit Gopabandhu Das from Satyabadi in the district of Puri were published. Both the periodicals encouraged the growth of patriotic literature in Oriya. The Satyabadi set a new trend in Oriya prose style by shedding the old verbiage and making the language more simple and idiomatic. The Sahakar (ସହକାର) appeared in 1919. It was first published from Puri under the editorship of late Lakshmi Narayan Sahu with a view to promoting the cause of co-operative movement in Orissa. Later, this became a literary periodical and started appearing from Cuttack under the editorship of late Balakrushna Kar. This magazine created a number of new writers and poets, many of whom are still active in Oriya literature. Balakrushna Kar was also the editor of Janhamamu (ଜନହାମୁ) (1934) a popular children's magazine in Oriya.

The "Yugabina" (ଯୁଗବିନୀ) (1934) edited by Shri Harihara Mahapatra, Nava Bharata (ନବ ଭାରତ) (1934) edited by late Pandit Nilakanth Das, Dagaro (ଦଗର) (1936) edited by late Lakshmikanta Mahapatra, Niankhunta (ନିଆଁଖୁଣ୍ଟା) (1938) edited by late Godavarish Mohapatra, Bhanja Pradeep (ଭଞ୍ଜ ପ୍ରଦୀପ) published from Mayurbhanj ex-state and Sankha (ଶଙ୍କ) edited by late Mayadhar Mansingh and published from Sambalpur were some of the popular magazines in Oriya which were published during the pre-Independence period.

The Gandhi Samachar (ଗାନ୍ଧୀ ସମ୍ବାଦ) published in 1924 for a month only under the editorship of late Niranjana Patnaik is said to be the first Oriya daily. This paper which was covering the tour programme and speeches of Mahatma Gandhi during his Orissa tour was a cyclostyled paper. The first printed Oriya daily is the "Dainika Asha" (ଦୈନିକ ଆଶା) (1928) which was being published from Brahmapur (Ganjam) under the editorship of Late Sashibhusan Rath. Its publication was stopped in 1945 and then for sometime it was coming out from Cuttack. This daily paper has again been revived and is being published from Brahmapur (Ganjam) since the 10th February, 1982. "The Samaj" (ସମାଜ), the widely circulated Oriya daily, started its publication as a weekly on the 4th October, 1919 from Satyabadi (in Puri district) under the editorship of late Pandit Gopabandhu Das. In 1924, the place of its publication was shifted to Puri, and then to Cuttack in 1927. On the 6th April, 1930, the weekly Samaj was converted to a daily. In 1923, "The Prajatantra" (ପ୍ରଜାତନ୍ତ୍ର) started its publication from Baleshwar as a weekly with Dr. Harekrushna Mahtab as its editor. It was converted to a daily in 1930 for a brief period and since 1947 it is being published as a daily paper from Cuttack.

The *Matrubhumi* (ମାତୃଭୂମି) first appeared as a bi-weekly in 1947 from Cuttack, then it was converted to a weekly paper in 1949. Since 1951 it is being published from Cuttack as a daily. Late Balakrushna Kar was the founder of this paper and was its first editor. The *Swarajya* (ସ୍ୱରାଜ୍ୟ) which started as a weekly paper was made a daily in 1966 and it is being published from Bhubaneswar. The other Oriya dailies in circulation are the *Koshala* (କୋଶଳ) (1971) from Sambalpur, *Dharitri* (ଧରିତ୍ରୀ) (1974), the *Pragatibadi* (ପ୍ରଗତିବାଦୀ) (1979), the *Dinalipi* (ଦିନଲିପି) (1981) and the *Sambad* (ସମ୍ବାଦ) (1982) from Bhubaneswar, the *Hirakhanda* (ହିରାକଣ୍ଡ) (1981), the *Agnisikha* (ଅଗ୍ନିଶିଖା), and the *Katusatya* (କଟୁସତ୍ୟ) from Sambalpur, the *Rastra Duta* (ରାଷ୍ଟ୍ରଦୂତ) from Baleswar and the *Jugabarta* (ଯୁଗବାର୍ତ୍ତା) and the *Rourkela Reporter* (ରୂରକେଲ ରିପୋର୍ଟର) from Rourkela.

Among the defunct Oriya dailies mention may be made of the *Deshakatha* (ଦେଶକଥା), the *Janata* (ଜନତା), the *Nava Bharat* (ନବ ଭାରତ), the *Kalinga* (କଳିଙ୍ଗ), the *Ganatantra* (ଗଣତନ୍ତ୍ର) and the *Janasakti* (ଜନଶକ୍ତି).

"The New Orissa" (1933), the first English daily of Orissa published from Brahmapur under the editorship of late Sashi Bhusan Rath, is no more in circulation. So also the second English daily "The Eastern Times" (1949) published from Cuttack under the editorship of Dr. H. Mahtab has ceased publication. At present the English dailies like the *Sun Times* and the *Orissa Times* from Bhubaneswar, "The News of the World" from Cuttack and "The Bharat, My Nation" from Sambalpur are in circulation.

Some of the English periodicals published in this century from Orissa are the *Oriya*, the *Adventure*, the *Young Utkal*, the *Cuttack Law Times*, the *Advertiser*, the *News and Notes*, the *Students Chronicle*, the *Observer*, the *Current Affairs*, the *Orissa Review*, the *Orissa First*, *My Struggle*, the *New Era*, the *Adjudication*, the *Orissa Law Journal*, the *Games and Sports*, the *New Life*, the *Orissa Historical Research Journal*, the *Bhubaneswar Review*, *Scrutiny*, the *Sportsmen*, the *Puri Express*, the *Community*, the *Chariot*, the *Orissa Past & Present*, etc. Some of these periodicals have now stopped publication.

A number of Oriya periodicals are now being published from different parts of the state. These are published in the form of weekly, monthly, quarterly, half-yearly or yearly covering articles on literature, science, history, astrology, commerce, politics, cinema, sports, etc. Of these periodicals, *Jhankar* (ଞ୍ଜାର) (1949) is published regularly and is the leading literary magazine of the state. Among other established periodicals of the state

the names of Sahakar (newly revived), Dagaro, Sucharita and Pourusa deserve mention. Naba Rabi (now defunct), Asantakali and Janhamamu are some of the Oriya periodicals published outside Orissa.

The English dailies like the Statesman, the Telegraph, the Times of India, the Hindu, the Business Standard; and the Indian Express, etc., and many weekly and fortnightly periodicals published outside Orissa have wide circulation in the state.

M. Botanical and Zoological Gardens, and Museums

Botanical and Zoological Gardens

The Nandankanan, a Biological Park, of varied beauty encompassing an area of 500 hectares of land was inaugurated on the 29th December, 1960. It is situated at a distance of 13 km. by road from Bhubaneswar via Patia and is under the Chandaka police-station in the district of Puri. A 2 km. motorable road connects this biological park with the Barang railway station on the South-Eastern Railway. It is located in the natural surroundings of the Chandaka forest. Out of the total park area of 500 hectares, a lake which is one of the main attractions for the visitors occupies an area of about 50 hectares. The lake with its out-flanking swamps and marshes attracts a large number of migratory birds of heterogeneous type during winter. There is facility for boating in the lake. A botanical garden to the north of the lake covers an area of about 100 hectares. The natural setting of the park is a rare distinction. Because of its nearness to the forest many wild animals and birds move around the park area freely. Frequent visits of animals like elephants are not uncommon.

There are nearly a thousand animals and birds of about 136 varieties in the park kept mostly in natural surroundings. The animals found in this park include sambar, spotted deer, barking deer, tiger, Indian lion, African lion, rhinoceros, black panther, clouded leopard, golden cat, leopard cat, sloth bear, crab-eating mongoose, pangolin, porcupine, elephant, bison, macaque, binturong, red-necked wallaby, Malayan sun bear, blackbuck, four horned antelope, Nilgai, baboons, Ladhaki goat, etc. The birds section consists of parakeet, pelican, peefowl, budgerigar, black swan, horn-bill, hill myna, stork, white-eyed buzzard, zebra finch, eagle, cockatoo, kite, owl, Shikra, Egyptian vulture, Nicobar pigeon, peacock, etc. A variety of reptiles like gharial, reticulated python, king cobra, etc., are there. Separate beds have been made for the crocodiles.

The biological park with its shady trees, green lawns, flower beds, beautiful lake and the botanical garden to the north of the lake is an ideal place for outing and picnic. For the pleasure and pastime of the children a children's toy-train has been provided in Nandankanan since August 1971. A road runs along the periphery of the lake and there are several link roads and paths criss-crossing the park which provide opportunity for leisurely stroll. Several smaller parks including one for children with provisions of children's tot-lots, merry-go-rounds, swings, etc., have been developed within the park area. Rest sheds and tourists' lodges have been constructed in beautiful silvan setting which can be hired by visitors on moderate charges for a short stay or for taking rest. There is also a restaurant to provide refreshment to the visitors.

The Forest Department maintains a museum at Nandankanan where specimens of rocks and minerals, varieties of forest products and stuffed specimens of animals and birds are preserved. The zoological garden of Nandankanan is under the administrative control of the Conservator of Forests designated as Chief Wild Life Warden with headquarters at Bhubaneswar. There is one Assistant Veterinary Surgeon to look after the animals and birds in the zoo. The botanical garden is under the administrative control of the Director of Horticulture, Orissa, Bhubaneswar.

Museums

The Jayadev Orissa State Museum is located at Bhubaneswar. There are several branch museums functioning in different parts the state. A detailed account on the museums is given in Chapter-I (Culture) of Orissa State Gazetteer, Vol. II.

2. MEDICAL AND PUBLIC HEALTH SERVICES

Survey of Public Health and Medical Facilities in early times

In the past, excepting the plains constituting the districts of Cuttack, Puri, Baleswar and a part of Ganjam most parts of remaining districts of Orissa were quite inaccessible due to the insurmountable Ghats and dense forests. The areas of Koraput, and Khondmals (now a subdivision in the district of Phulabani) were highly malarious. Government servants not belonging to these areas were reluctant to serve there and a special allowance was given to them to compensate for the unhealthiness caused. In the

districts of Koraput, Phulabani, Sundargarh, Kendujhar, Mayurbhanj and Sambalpur the Adivasis formed a considerable portion of the total population, who hardly knew or followed any hygienic method for maintenance of health or treatment of diseases. Even in the plains people were not much aware of hygiene. Thus public health suffered in early times due to epidemics like malaria, smallpox, cholera, etc., which were not uncommon, and people had no knowledge about their cure and prevention. These fatal diseases were frequent visitors leaving the villages depopulated and deserted. And these diseases were believed to be due to the wrath of some goddess (Thakurani), the village deities, the dead ancestors or sorcery.

Treatment of the diseases was mainly based on religious faiths and beliefs. The village priests and the witch doctors played dominant role in healing of the diseases. Various religious methods such as animal sacrifices, offering of Pujas were prescribed for propitiating the offended deities. Chanting of Mantras and Hukum were also often taken recourse to, to get rid of the fatal diseases. Such practices, though not common at present are still followed in the rural areas by the ignorant villagers specially by the tribal people.

The Ayurvedic system was prevalent in the past and was popular among the people. The Kaviraja or the Vaidyas were then the medical practitioners and it was a traditional profession in some families. In the ex-state areas the ruling chiefs had their own family Vaidyas. The medicines, the Vaidyas used, were mainly prepared from different types of herbs and plants found in the local forests. The Ayurvedic system of treatment is still popular among large section of the people.

The Unani system of treatment of diseases was popular mostly among the Muslims. The use of homoeopathic medicines is not much old. As homoeopathic medicines are comparatively cheap, it has become popular especially among the poorer section of the people. With the introduction of the western system of medical treatment known as the allopathic system, it has gained wide popularity because of its immediate relief and surgical operations. The allopathic system received state patronage and many hospitals and dispensaries were established. It is now commonly followed every where. After India became independent the ayurvedic, the Unani and the homoeopathic systems of treatment are also getting due attention and patronage from the Government.

Vital Statistics

After the creation of Orissa as a separate province in the year 1936 with the amalgamation of the Oriya-speaking tracts from the then provinces of Bengal, Bihar, Madhya Pradesh and Madras the systems of registration of births and deaths as prevalent in Bengal and Madras were followed in these areas. The Bengal Births and Deaths Registration Act, 1873 was made applicable all over the state in the year 1952.

Prior to the introduction of the Panchayat Raj system of village administration, the village Chowkidars were in charge of collection of vital statistics and they were reporting births and deaths to the police-stations on their weekly parade days. The Officer-in-charge of the police-station maintained the prescribed registers and was furnishing monthly returns to the District Health Officer for the district compilation, who in turn sent the consolidated return to the Director of Health Services, Orissa, for state compilation.

The enactment of the Orissa Grama Panchayat Act, 1948, provided registration of births and deaths and marriages as one of the obligatory functions of the Grama Panchayats. The Chowkidar continued to remain in charge of the collection of vital statistics, but the police and the Grama Panchayat authorities exercised a lot of diarchical control over him, for which the collection of vital statistics considerably suffered. Prior to the introduction of the Orissa Grama Panchayat Act, 1948 the statistics obtained through the Chowkidars alone were sufficiently accurate for the purpose of calculating the approximate growth of population as well as the relative healthiness and unhealthiness of different years, although little reliance could be placed on the classification of diseases to which deaths were attributed.

With the abolition of the Chowkidari system in the state in between 1963-65, the process of collection of vital statistics received a severe set-back and were unsystematic. Subsequently various attempts were made for systematic collection of information. The Orissa Grama Panchayat Act, 1964 was passed wherein the registration was made compulsory. The Government of Orissa in consultation with the Registrar General of India prepared and printed the Manual of Instructions for registration and reporting of births, deaths and epidemics during the year 1965 and the task was entrusted

to the Grama Panchayats which they could not discharge properly. The State Government then issued an ordinance on the 10th January, 1967 known as the Orissa Grama Rakshi Ordinance, 1967, and subsequently passed the Orissa Grama Rakshi Act, 1967 on July 29, and the Orissa Grama Rakshi Rules on the 11th May, 1969 under which the Grama Rakshis, besides their normal duties, were required to report births and deaths occurring within their jurisdiction to the Officer-in-charge of their respective police-stations fortnightly. In the urban areas where sanitary staffs existed, registration of births and deaths were done by them. But all these steps proved to be futile and could not serve the purpose.

In the meanwhile Government of India introduced a scheme of Sample Registration System for reliable estimates of birth and death rates and the scheme is still continuing. The Registration of Births and Deaths Act, 1969 (Act No. 18 of 1969) was passed by the Government of India which has been enforced in the state with effect from the 1st April, 1970, and the Government of Orissa framed the Orissa Registration of Births and Deaths Rule 1970. The Officer-in-charge of the police-station in the rural areas and the Health Officer, or, in his absence, the Executive Officer of the Notified Area Council or the Municipality in the urban areas act as Registrars*. Under these rules, the Chief District Medical Officer acts as the District Registrar and Director of Public Health Services Orissa, the Chief Registrar. It is the responsibility of the head of the household to make reports about the births and deaths within a stipulated time. There is provision of penalties of a nominal amount, as the Act provides, in a graduated scale for the period of delay or failure to report on the part of the reporting agency. Different officers in charge of various institutions, hospitals, hotels, running trains, buses, etc., are also responsible for notifying the births and deaths.

Though registration has become obligatory on the part of the head of the household, yet people seem to be indifferent in reporting, especially in the rural areas. The utility of registration of births and deaths is being given publicity through radio, exhibition of documentary films and distribution of pamphlets. But unless the importance of the issue is brought to the door of the rural folk, and an awareness created among them, the system may, like the previous ones, prove abortive. As the people are not coming forward for registration, all the events are not recorded properly, and hence, the rates arrived at are very low while compared to the national estimates.

*Registrar of Births and Deaths

Vital rates arrived at by the Sample Registration Scheme from 1970 to 1978 are given below:

Year	Crude Birth Rate (per 1,000)	Crude Death Rate (per 1,000)	Infant mortality Rate (per 1,000)
(1)	(2)	(3)	(4)
1970	38.00	16.48	132.38
1971	34.56	15.60	127.83
1972	34.86	20.23	133.72
1973	34.88	18.35	147.23
1974	33.56	16.19	150.33
1975	33.54	17.90	149.23
1976	34.92	16.48	126.20
1977	30.16	16.85	166.63
1978	32.88	14.26	136.54

Diseases Common to the State

Though the state is very often prone to natural calamities like drought, flood and cyclone, yet deaths due to cholera and gastroenteritis have been arrested considerably by different prompt preventive measures. Important causes of mortality in the state are infectious diseases like typhoid, amebiasis, colitis, enteritis and gastroenteritis, tuberculosis, bacterial diseases like leprosy, diphtheria, whooping cough, tetanus; viral diseases like measles, acute poliomyelitis and malaria. It has been observed from the hospital treatment figures that nearly 30 per cent of the total patients die from these diseases. The next group of common diseases is of digestive system which accounts for about 16 per cent of the total death that occurs in the hospitals. The disease of the circulatory system, i.e., hypertension comes next. It is noticed that though mortality due to malnutrition is not very high, the diseases caused by malnutrition take a heavy toll of life. As figured in the foregoing table infant mortality is very high in the state.

Public Hospitals and Dispensaries

The Shriram Chandra Bhanja Medical College & Hospital, Cuttack, with 1,247 beds; the Vir Surendra Sai Medical College & Hospital, Burla, Sambalpur, with 750 beds; the Maharaja Krushna Chandra Gajapati Medical College & Hospital, Brahmapur, with 822 beds and the Ispat General Hospital, Rourkela, with 475 beds are some of the big hospitals in the state with a number of specialists in different fields such as medicine, surgery, etc. Each district headquarters hospital and some subdivisional headquarters hospitals have also been provided with specialists. This apart, there are a number of hospitals and dispensaries, Primary Health Centres, Medical Aid Centres and Mobile Health Units in urban and rural areas to provide medical facilities to the people. Bed strength in different government hospitals in the state during 1981-82 was 10,355. During 1977 there were altogether 245 hospitals, 322 dispensaries, 314 Primary Health Centres, 72 Medical Aid Centres and 14 Mobile Health Units in the state. The district-wise break-up of the number of hospitals, dispensaries, Primary Health Centres, Medical Aid Centres and Mobile Health Units as existed in the year 1981-82 is given in Appendix-II of this chapter. Besides, there are also some ayurvedic and homoeopathic hospitals and dispensaries functioning in the state. During the year 1980-81 there were three ayurvedic hospitals in the state, viz., the Gopabandhu Ayurvedic Mahavidyalaya at Puri with a 80 bedded hospital attached to it, one ayurvedic hospital at Bhubaneshwar with 35 beds and the other at Balangir with 30 beds. There were 304 ayurvedic dispensaries (including one Unani dispensary at Bhadrak) in the state in 1980-81.

During the year 1980-81 there was only one Government homoeopathic hospital in the state with 50 beds attached to the Government Homoeopathic Medical College, Bhubaneshwar. In the same year there were 241 homoeopathic dispensaries functioning in different parts of the state.

Number of Doctors and Nurses and Specialists and other staff

The number of doctors, nurses, etc., in the state as on 31st December, 1979 was as follows: Doctors 2,681, Nurses 1,181, Auxilliary Nurses and Mid-wives 2,952, Pharmacists 1,097, Sanitary Inspectors 1,122, Health Assistants 176, Surveillance Inspectors (special) 495, Special Cholera Workers 302, Vaccinators 1,373, F. P. 272, Ladies Health Visitors 701, Family Planning Field Workers (M) 669, Family Planning Field Workers (F) 2,938, Family Planning Extension Educators 289, Leprosy Assistants 216, Multipurpose Field Workers 4,588, Paramedical Workers 768,

Non-Medical Supervisors 84, Community Health Volunteers 7,655, Laboratory Technicians 692 and Cholera Supervisors 62. The strength of doctors in ayurvedic and homoeopathic hospitals in the state were 355 and 281 respectively during 1980-81.

The sanctioned strength of the specialists in different branches in different headquarters hospitals, subdivisional hospitals and other important hospitals of the state during 1980 was Medicine 54, Surgery 50, Obstetric and Gynaecology 65, Ophthalmology 15, Paediatric 18, Pathology 21, Ear, Nose and Throat 15, Radiology 17, Anaesthesiology 15, Skin and Venereal Diseases 11, F. M. T. 1, Orthopaedics 20, Cardiology 1, Psychiatric 4, and 1 for Hospital Administration. This apart, there are also specialists in three Medical College Hospitals of the state.

Expenditure

Expenditure on Medical (including Indian systems of Medicine and Homoeopathy) and Public Health (including Family Welfare) from 1973-74 to 1978-79 is shown in the following table.

Year	Expenditure (Rupees in lakhs)		Per capita expenditure on health (in Rs.)	
	Medical	Public Health and Family Welfare	Total	
(1)	(2)	(3)	(4)	(5)
1973-74	824.36	515.27	1,339.63	5.84
1974-75	989.31	485.47	1,474.78	6.31
1975-76	1,270.36	654.53	1,924.89	8.08
1976-77	1,300.50	1,181.37	2,481.87	10.23
1977-78	1,397.03	934.98	2,332.01	9.44
1978-79	1,524.04	1,290.54	2,814.58	11.20

Public Health Sewerage Scheme

The sewerage schemes for the New Capital, Bhubaneswar and Cuttack are ongoing projects to be executed in phases. During 1978-79 an expenditure of Rs.15.68 lakhs was incurred under both the schemes. In 1979-80, Rs.10.5 lakhs were spent in the implementation of these schemes.

For improving the sanitary conditions of the people in the urban areas the existing service latrines are being converted into flush latrines and for this purpose financial assistance in shape of loan is provided to the Urban Local Bodies. An allocation of Rs. 100 lakhs had been earmarked under the scheme for the Sixth Five Year Plan. During 1978-79 and 1979-80 an amount of Rs. 5 lakhs and Rs. 8 lakhs were spent under the scheme respectively.

Environmental Improvement of Slums

The towns of Cuttack, Puri, Chaudwar, Rourkela, Sambalpur, Brahmapur and Bhubaneshwar have been selected under the scheme of Environmental Improvement of Slums to ameliorate the living conditions of slum dwellers by providing civic amenities like water-supply, sanitation, paved roads, street lighting and improved hutments. The Sixth Plan allocation for the scheme was Rs. 450.00 lakhs. In the first three years of the Sixth Plan the programme was confined to Cuttack city only. Later it was extended to the towns of Bhubaneshwar, Sambalpur, Rourkela, Brahmapur, Puri, Jagatsinghapur, Jharsuguda, Baragarh, Kendraparha and Jajpur Road. The target coverage of 50,000 slum population has been achieved by 1984-85.

Urban Water Supply

With a view to ensure safe and protected drinking water-supply in the urban areas 22 water-supply schemes were under execution in March 1980. Out of the 22 on-going schemes, Government have fully given their share in respect of 19 schemes and in rest three schemes Government share have not been fully provided. Government have declared 96 urban bodies, as Municipalities (27) and as N. A. Cs. (69) till March 1981. The total population of these urban bodies stands at 30.05 lakhs according to 1981 Census, i.e., up to the end of March 1981. 10.27 lakhs have been provided with safe drinking water facilities in 75 urban local bodies (25 Municipalities and 50 N. A. Cs.).

Rural Water Supply

According to a survey conducted by the State Public Health Engineering Organisation towards the end of 1980 out of 46,992 inhabited villages with a population of 200.99 lakhs, 27,077 villages were identified as problem villages (basing on 1971 Census) covering a population of 143 lakhs, for supply of safe drinking water. The State Government is taking steps to provide safe drinking water to these villages through boring of tube-wells/sanitary

wells which would benefit 143 lakh population. In October 1977 the Government of India had decided to take up Accelerated Rural Water Supply Programme in these villages through full central assistance. The Government have formulated a programme to provide one tube-well fitted with handpump/power pump for every 250 population or part thereof. Under both the Accelerated Rural Water Supply Programme and the Minimum Needs Programme, by the end of March, 1981, 18,000 tube-wells were sunk in the identified villages and 45.25 lakhs people were benefited by it. By the end of 1983-84, a total number of 54,355 tube-wells were sunk under all programmes including plan programmes and also with funds made available for relief measures on natural calamities like flood, drought and cyclone.

Anti-leprosy works

Anti-leprosy work in the state is being carried out by the State Government, the Central Government and voluntary organisations. In 1977, 36 Leprosy Control Units, 3 Leprosy Pilot Projects, 148 Survey Education and Treatment Centres, 50 rural clinics, 7 Leprosy colonies, 5 urban leprosy clinics, 2 reconstructive survey units and 3 temporary hospitalisation wards were functioning in the state.

The table given below indicates the number of Control Units, the number of Leprosy Pilot Projects, the number of persons examined, the number of cases detected and the number of cases under treatment in the state from 1974 to 1978.

year	No. of control units	No. of Leprosy Pilot Projects	No. of persons examined	No. of cases detected	No. of cases under treatment
(1)	(2)	(3)	(4)	(5)	(6)
1974	27	6	9,49,592	7,975	6,262
1975	33	3	9,44,115	8,872	7,049
1976	33	3	12,64,000	1,04,042	89,119
1977	36	3	23,67,942	18,358	16,119
1978	39	1	27,02,747	20,709	N. A.

N. A.—Not available

National Filaria Control Programme

The National Filaria Control Programme was started in the state in the year 1955-56 with the help of the Government of India. Eleven National Filaria Control Programme units were functioning in 1978 to carry out anti-larval operation in the urban areas. Mosquitoes were being collected, identified and dissected for determination of infection rate. The details of the operation made under the National Filaria Control Programme units in the state from 1974 to 1978 are given in the following statement.

Year	No. of Natio- nal Filaria Control Units	Quan- tity of M. L. oil used	No. of Mosqui- toes collec- ted	No. of Mosqui- toes disse- cted	No. of blood slides collec- ted	No. of posi- tive blood slides
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1974	9	5,54,789	78,366	53,288	5,089	410
1975	9	6,10,979	N. A.	52,055	8,966	807
1976	9	6,88,666	1,08,409	77,550	11,851	1,150
1977	9	4,30,840	1,18,983	80,714	8,603	574
1978	11	2,83,258	1,30,415	73,249	13,812	811

National Malaria Eradication Programme

The National Malaria Eradication Programme is a centrally sponsored scheme. Thirteen, National Malaria Eradication units are now functioning in this region for the purpose. The main objective of the programme is to prevent the transmission of malaria, to prevent death due to malaria, to keep the malaria morbidity under check, and to prevent adverse effect of malaria on agriculture and industry. Accordingly as per the programme, two rounds of D. D. T. spray is being done every year. Similarly fortnightly surveillance is being carried out throughout the state covering the entire population. Drugs distribution depots and fever treatment centres are functioning, mainly in the tribal, hilly and inaccessible areas so as to provide immediate medical relief to these people. Anti-malaria drugs are now being distributed through Mahila Samitis, Youth organisations, the Panchayats and the school teachers.

A statement showing the number of malaria eradication units, blood slides collected, examined, and cases detected and treated in the state from 1974 to 1978 (year-wise) is given in the table below.

year	No. of National Malaria Eradica- tion units	Blood slides collected	Blood slides examined	Cases detected and treated
(1)	(2)	(3)	(4)	(5)
1974	15	2,713,903	2,181,222	297,916
1975	15	2,605,584	1,478,255	317,669
1976	15	3,166,580	2,094,165	267,155
1977	13	2,940,000	1,873,000	212,337
1978	13	3,233,186	2,638,697	335,577

Tuberculosis Control Programme

Efforts to control Tuberculosis in the state are being made by the National T. B. Control Programme which aims at achieving prophylaxis against Tuberculosis by mass B. C. G. vaccination and controlling the spread of infection by detection and treatment of symptom. The basic functional units of the programme are the District T. B. centres which are supervised and co-ordinated by a Deputy Director, Health Services, at the state level. The UNICEF provides financial assistance to all the District T. B. Centres excepting those functioning in the districts of Balangir, Kendujhar, Koraput, Phulabani and Sambalpur as these do not fulfil the norms and conditions designed by the UNICEF. In 1977 there were three T. B. hospitals having 340 beds, 10 T. B. Isolation centres and 13 District T. B. centres including the Anti-T. B. Demonstration and Training Centre, Cuttack. This apart, treatment facility of T. B. patients was available in 6 privately managed hospitals. All the 13 B. C. G. teams carry out door to door vaccination work in the villages and schools under the technical supervision of the District T. B. Officers.

The achievement of the B. C. G. teams in the state from 1974 to 1978 (year-wise) is given in the following table.

Year	No. of T. B. treatment centres			Total Registration	Total vaccination
	District	Others	Total		
(1)	(2)	(3)	(4)	(5)	(6)
1974	12	6	18	14,69,659	4,27,048
1975	12	6	18	16,63,317	5,09,848
1976	12	6	18	21,40,205	6,92,319
1977	13	6	19	20,15,232	6,39,844
1978	13	8	21	20,67,115	6,49,549

The year-wise activities in the field of diagnosis, treatment, etc., of the T. B. centres in the state from 1974—78 is furnished below.

Year	No. diagnosed as T. B.	No. of sputum found positive	No. of sputum found negative	Extra pulmonary T. B. cases	No. of cases with M.M.R.
(1)	(2)	(3)	(4)	(5)	(6)
1974	12,126	3,636	26,384	1,254	7
1975	11,162	4,228	21,035	8,825	6
1976	13,117	4,695	34,319	10,517	..
1977	14,040	5,077	34,058	12,239	..
1978	13,513	5,005	6,666	1,842	..

Cholera Control Programme

Cholera and Smallpox are made notifiable under the Epidemic Diseases Act, 1897, as and when situation so arises. Cholera is no longer a fatal disease in the state and incidence of death due to cholera is not high.

Incidence of cholera during last five years, i.e., from 1974 to 1978 in the state is given in the following table.

Year	Attack	Death	Percentage of fatality rate	Death rate of 1,000 population
(1)	(2)	(3)	(4)	(5)
1974	958	204	21.3	0.008
1975	757	155	20.5	0.006
1976	427	67	15.7	..
1977	324	30	9.3	..
1978	181	27	14.9	..

Advance preventive measures are being undertaken to check this disease and to arrest its spread. Temporary regulations under the Epidemic Diseases Act, 1897 were promulgated making anti-cholera inoculation compulsory in all the thirteen districts of the state. Water sources are being chlorinated and houses disinfected regularly by the Mobile Field Hygiene Units so as to prevent and control the spread of the disease, a statement of which is given in the following table for five years, i.e., from 1974 to 1978.

Year	Innoculations	Wells chlorinated	Houses disinfected
(1)	(2)	(3)	(4)
1974	2,954,534	2,70,347	4,677
1975	5,582,945	3,42,855	6,391
1976	4,359,000	4,58,000	11,188
1977	4,906,000	5,70,000	3,600
1978	3,181,000	12,16,000	2,005

Cholera Control Programme is in operation to combat and check the disease. Out of the thirteen districts of the state, four coastal districts, viz., Cuttack, Puri, Balেশwar and Ganjam have been graded as epidemic districts for cholera. Unfortunately, to make the situation worse, these districts are victims of regular flood and cyclone. The Cholera Control Programme is in active operation in

these regions from the C. D. Block level. An epidemiologist placed in charge of the State Epidemiological Bureau is the Programme Officer for the implementation of the programme. He is assisted by some other staff. At the district level the Chief District Medical Officer is in charge of implementing the programme. The cholera control measures in the epidemic districts are being undertaken by the staff of the Cholera Control Programme and the regular public health staff of the Primary Health Centres.

Smallpox Control Measures

Incidence of death due to smallpox is in complete extinction from the state. Since the year 1976 not a single death has occurred due to this one-time most fatal disease and the state of Orissa has been declared free from smallpox by the International Commission since April 1977. The Smallpox Eradication Programme, a centrally sponsored scheme, was taken up in the state since 1970 and has been implemented effectively. Preventive measures under this scheme are still being undertaken in the state. The table given below shows the number of attacks and deaths due to this disease, and the primary vaccination and revaccination performed in the state during the years 1974 to 1978.

Year	Attack	Death	Primary vaccination	Revaccination
(1)	(2)	(3)	(4)	(5)
1974	1,937	344	859,118	6,175,545
1975	6	1	627,765	4,012,826
1976	..	..	638,000	2,247,000
1977	..	..	5,74,000	1,175,000
1978	..	..	695,714	889,154

Yaws Control Programme

Yaws is a disease mostly prevalent in the hilly and forest areas of the state with its marked predominance among the tribal people. The Harijan and Tribal Rural Welfare Department of the Government of Orissa with the collaboration of the Union Government and the UNICEF have taken up its survey and control measures. Four Anti-Yaws Teams including one Re-survey Team were in operation in 1977 in the tribal pockets of the districts of Balangir, Dhenkanal, Koraput, Sambalpur and Sundargarh.

The statement furnished below gives an account of the performance of the teams in the state in 1977.

Name of the Team	Persons surveyed	Cases spotted and treated	Cases cured
(1)	(2)	(3)	(4)
'A' Team Sundargarh district	130,839	21	16
'B' Team Balangir district (working at Kalahandi)	40,332	20	20
'C' Team Dhenkanal-Sambalpur	77,462	15	15
(working at Deogarh)	180,988	105	98
Re-survey Team Koraput district	250,583	210	210

3. SOCIAL WELFARE

On attainment of independence India has become a 'Welfare' state. Promotion of social welfare has been enjoined in the Constitution of India as an important directive principle of state policy. No doubt during the British period some important social welfare measures like abolition of widow burning (Suttee sacrifice) on her husband's pyre according to social custom, prohibition of child marriage and abolition of Mēriah (human) sacrifice by Kondhs in tribal areas which are purely anti-social practices were undertaken; but that was a drop in the ocean. Considering the extent of social evils prevalent in our country, there are large sections of people in India as well as in Orissa who are socially, economically, culturally in a disadvantageous position. Therefore, in the Directive Principles of the State Policy, the Constitution directed the state to "strive to promote the welfare of the people by securing and protecting as effectively as it may a social order in which justice, social, economic and political shall inform all the institutions of the National life" (Art. 38). In particular the Constitution provides for;

- (1) Protection against exploitation of childhood and youth.
- (2) To education and to public assistance in case of unemployment, old-age, sickness and disablement.
- (3) To secure just and humane conditions of work and for maternity relief.

- (4) A living wage for workers, agricultural and industrial and otherwise.
- (5) Provision for free and compulsory education for all children up to 14 years of age.
- (6) Promotion of education and economic interest of Scheduled Castes and Scheduled Tribes and other weaker sections.
- (7) To raise the level of nutrition and to improve public health.
- (8) To take steps to bring about 'prohibition' of intoxicating drinks (except for medical purposes).

All these directives aim at securing social welfare of the people. An attempt is made within limited space available to give a broad outline of all these and some other aspects of social welfare activities in the state of Orissa.

Welfare of Labourers—Industrial and Agricultural

According to 1971 Census there were about 405,954 Industrial Labourers with 331,227 males and 74,727 females, both in organised as well as in un-organised sectors. The proportion of Industrial force in organised sector was only 21.95 per cent of the total Industrial force. Welfare of Industrial labourers has been secured by enforcement of two sets of labour laws. One set of labour laws benefits by way of service conditions including wages and salaries, medical benefits, insurance, retirement benefits, workmen's compensation in case of injuries, death, etc. Another set of labour laws looks into the organisation of Trade Unions by the labourers and their relations with the management for securing better condition of service, for worker's participation in the management and arbitration of industrial disputes, etc. Some of the important laws passed by the Central Legislature from time to time in the interest of welfare of the Industrial Labourers are as follows:

1. Workmen's Compensation Act, 1923 (as amended from time to time)
2. The Payment of Wages Act, 1936 (as amended)
3. The Employment of Children Act, 1938 (as amended)
4. Industrial Employment (Standing Order) Act, 1946 (as amended)
5. The Factory Act, 1948 (as amended)
6. The Minimum Wages Act, 1948 (as amended)
7. The Mines Act, 1952

8. The Employees' Provident Funds and Family Pension Act, 1952
9. The Shops and Commercial Establishments Act, 1956
10. The Iron Ore Mines Labour Welfare Cess Act, 1961
11. The Contract Labour (Regulation and Abolition) Act, 1970
12. The Payment of Gratuity Act, 1972
13. Orissa Dadan Labour (Control and Regulation) Act, 1975 since repealed by the Inter State Migrant Workman (Regulation of Employment and Conditions of Service) Act, 1979
14. The Trade Union Act, 1926 (as amended up to 1964)
15. Industrial Disputes Act, 1947 (as amended up to 1972)
16. The Employees' State Insurance Act, 1948 (Amended up to 1966)
17. The Maternity Benefit Act, 1961

Orissa Government have also enacted certain other laws as given below for the benefit of respective categories of workers and employees:

1. Orissa Industrial Housing Act, 1969
2. Orissa Industrial Establishment (National and Festival) Holidays Act, 1969
3. Orissa Motor Transport Workers Act, 1969.
4. Bidi and Cigar Workers (Conditions of Employment) Act, 1966
5. The Orissa P. W. D., Electricity Department Contractors' Labourers Labour Regulations

With the limited space available in the State Gazetteer, it is not possible to describe the scope of all these laws enacted for benefit mostly of Industrial Labourers who are organised. The most important unorganised sector in Orissa as elsewhere in India comprises the agricultural labourers in whose interest and for whose benefit many laws and rules have not been framed or made operative. According to the 1981 Census there are about 24 lakhs of landless agricultural labourers in the state which forms about 28 per cent of the total main workers in Orissa and whose interests have not been adequately safeguarded by laws.

The most important welfare measure taken for agricultural labourers is under the Minimum Wages Act, 1948 (which is a Central Act) and the Orissa Minimum Wages Rules, 1954 as amended from time to time. Under this Act, minimum wages have been fixed by Government for various categories of labourers in the state at various rates from time to time primarily on consideration of rise in consumer's price index (C. P. I). The minimum rates of wages statutorily fixed for agricultural workers was Re. 0.62 to 0.75 per day in the year 1954 in different areas. Similarly in the non-agricultural sector like construction, etc., it varied from Re. 0.75 to one rupee per day. For workers in mines the Central Government fixed minimum wages. The present daily rates of statutory minimum wages are as follows:

Agriculture		Non-agriculture		Mines	
Year	Rs.	Year	Rs.	Year	Rs.
(1)	(2)	(3)	(4)	(5)	(6)
1960	0.67 to 1.00	1960	1.25	1982	8.75 (over ground) 10.50 (under ground)
1965	1.00	1965	1.50		
1972	2.00	1972	2.50	1983	9.75 (over ground)
1974	3.00	1974	3.00		11.75 (under ground)
1976	4.00	1975	5.00		
1980	5.00	1981	6.00	1985	11.00 (over ground)
1982	6.00	1983	6.50		13.25 (under ground)
1984	7.50	1984	7.50		

For Bidi workers, Kendu-leaf and Sal-seed pluckers, piece rate minimum wages have been fixed by the State Government keeping in mind the minimum wages fixed for similar labourers in other sectors of activity.

As it often happens the minimum wages in agricultural sector usually is the maximum actually paid to agricultural labourers in most part of the state. The statutory minimum wage for agricultural labourer is Rs. 7-50 per day. But in peak harvesting season where demand for labour is more they also get more than this minimum wage in some places of the state. The women labourers however, invariably get less wages than their male counterparts. There is no effective state machinery to enforce this minimum wage. There is some seasonal migration of agricultural labourers from the tribal and hilly areas of Kendujhar, Mayurbhanj and Nilagiri ex-states to adjoining coastal places and even to adjoining districts of West Bengal. Similarly the fertile delta region of Cuttack and Puri districts and rich irrigated area of Sambalpur district attract seasonal migration of agricultural labourers from central and southern Orissa. During periods of drought, they become the most vulnerable population to distress and hunger and Government effort to provide test relief works for these labourers does not adequately meet the situation.

Abolition of Bonded Labour System

Abolition of Bonded Labour system is one of the important items of the 20-Point Economic Programme of the Prime Minister. Bonded labourers in Orissa are otherwise known as 'Gotis'. This *goti* system was prevalent in tribal areas of Ganjam and Koraput districts and in some parts of Kalahandi. The Goti was usually a tribal and sometimes a Harijan labourer whose services were mortgaged for years together to the employer against heavy debt till the debt was repaid and if this could not be repaid in the lifetime of the debtor his successor continued to do the service under the employer. The Orissa Debt Bondage Abolition Regulation formally abolished this system as early as 1948 in the Agency areas of Ganjam and Koraput districts, and in Nuaparha subdivision of Kalahandi district which were partially Excluded Areas under the Government of India Act, 1935. But implementation of this Act was defective and inoperative. The bonded labour system also exists in other areas of the state and in many other states of India. This being a heinous social evil under which the poor debtor is forced by economic necessity to undertake labour unsuited to his age, health or strength, the Central Government intervened and passed the Bonded Labour System (Abolition) Act, 1976 which came into force from the 4th March, 1976. The bonded labour system stood abolished under this Act and the bonded labourer was freed and discharged from any obligation to render any bonded labour or to repay any bonded debt remaining unsettled. Keeping a bonded labourer was made an offence punishable with imprisonment up to 3 years and also with

fine up to Rs. 2,000. The District Magistrate and the subordinate officers specified by him were made responsible for effective implementation of provisions of this Act. Executive Magistrates were authorised to punish the offenders and jurisdiction of the judiciary was barred. But mere identification of the bonded labourer making him free and punishment of the offender would not serve the purpose as the labourer would revert to the bonded system unless he is properly rehabilitated. Therefore, a centrally sponsored scheme of rehabilitation of bonded labourers was introduced as a plan scheme to be shared on 50 : 50 basis by the Government of India and the State Governments. Emphasis was laid more on rehabilitation than on punitive aspect of the Act. "Rehabilitation of bonded labour" now forms an important programme (pt. No. 6) in the 20 pt. economic programme of the Prime Minister. Guidelines were issued by Government that for purpose of rehabilitation the definition of bonded labour as given in the Bonded Labourer System (Abolition) Act should be interpreted liberally although this identification may not lead to punishment to the employer under a Criminal Court of Law. It was explained that an element of forced labour agreement which constitutes the most important ingredient under the bonded labour system should ordinarily be presumed to be in existence in respect of some of the forms of forced labours which is customary in different parts of the state; namely—Barmasia, Halia, Bethia, Kothia, etc. The scheme of rehabilitation of bonded labourers came into operation during 1978-79 in Orissa. This was dovetailed with the scheme of "Economic Rehabilitation of Rural Poor" (E.R.R.P.) launched by the State Government since the year 1980—81. As a result, the progress of identification and rehabilitation of the bonded labourers has registered substantial improvement. The achievement of rehabilitation of 12,841 bonded labourers during 1982-83 was the highest in the country. Since inception of the scheme in 1978-79 till 1984-85, 40,309 bonded labourers have been identified, 36,105 freed and 24,871 rehabilitated and a sum of Rs. 526.16 lakhs have been spent for their rehabilitation.

Social Welfare under Directorate of Social Welfare

During the last seven years, particularly in the first two years of the Seventh Plan, Social Welfare programmes have received greater attention from the State Government, than ever before. A wide variety of new programmes have been introduced, existing schemes extended over a larger area and more effective implementation ensured. Besides stepping up of the financial outlay substantially, the State Government's Social Welfare programmes now cover, not only a much wider spectrum

of activities, but also represent more effective intervention, in depth, on behalf of the specially vulnerable members of the community like children, women, the disabled and the old.

At the beginning of the Sixth Plan, in 1980-81, the Plan provision for Social Welfare programmes, including Nutrition Schemes, was Rs. 93.22 lakhs. By 1984-85, the outlay was more than doubled to Rs. 237.09 lakhs. The State Government's firm commitment to improving the lot of the socially and physically handicapped is borne out by the fact that the Plan outlay on these programmes now stands at Rs. 462.82 lakhs in 1986-87 which is nearly double the outlay at the end of the Sixth Plan. The non-Plan provision has also increased significantly from Rs. 487.40 lakhs in 1980-81 to Rs. 926.68 lakhs in 1984-85. The budget for 1986-87 provides Rs. 993.30 lakhs on the non-Plan side for Social Welfare programmes. Once again, the State Government's investment in this sector, on the non-Plan side has more than doubled during the last seven years. It is noteworthy that the funds provided even on the non-Plan side for Social Welfare programmes is largely for the programme expenditure under the broad classifications of Women's Welfare, Child Welfare, Handicapped Welfare, and Nutrition.

For the effective implementation of Social Welfare programmes, a separate Directorate of Social Welfare was set up in the Community Development and Rural Reconstruction Department from the beginning of 1985. The field establishment has also been reorganised and a supervisory officer provided at the sub-divisional level to guide and monitor social welfare schemes.

Welfare of Women and Children

Women and Children have always been vulnerable to social and economic exploitation. Economic development has also brought with it newer forms of such exploitation. The State Government have taken a number of measures to combat the traditional as well as newer forms of discrimination and deprivation. The schemes for providing training in trades and crafts to widows, abandoned women and women in moral danger have been expanded. Against 135 women receiving training annually in 1980-81, by 1985-86 nearly 250 women were being trained each year. In 1980-81 there were only 2 centres for the sale of products made by women's organisations. By 1984-85, 11 such centres were established. With the growth in educational facilities and rapid economic development, a larger number of

educated women are joining the work force in urban and semi-urban areas. Single working woman face a lot of difficulties in finding congenial and secure residential accommodation in cities and towns. Construction of working women's hostels through voluntary agencies with state assistance is the only effective solution to this problem. In 1980-81, there were 2 such hostels in the state. By 1984-85, 2 more were added. The State Government had sponsored these cases for central assistance. However, since 1984-85, the State Government have introduced a policy of providing additional financial assistance, free technical advice for construction as well as land free of Salami to encourage construction of working women's hostel. Under the liberalised policy of assistance, construction of 4 new hostels were started in 1985-86 at Dhenkanal, Sambalpur, Brahmapur and Olatpur. During 1986-87, 4 more hostels are expected to be started at Jaypur, Balangir, Puri and Burla. It is significant that a number of these hostels are coming up in backward and tribal districts, where the problems confronting working women would be more acute. The State Government have also launched a programme to create awareness against social evils like dowry and other atrocities committed against women. The scheme was first introduced in 1983-84.

Neglected children, which includes orphans, abandoned children as well as children whose parents are incapable of looking after them, children of lepers constitute a very vulnerable group for whom the State Government have to provide facilities for proper upbringing. The State Government have been assisting voluntary agencies in running Children Homes for the care and protection of such children. At the beginning of the Sixth Plan, 40 such institutions were looking after about 740 neglected children. By 1984-85 assistance was being given to 52 such Homes to take care of about 2,800 children. By 1985-86, more than 3,000 children are being provided such facilities. The maintenance grant given to these institutions has also been substantially increased to enable them to provide better facilities. From October 1985, the maintenance grant has been increased to Rs. 145 per month per child uniformly. Previously maintenance grant was being released at Rs. 85 per child under the non-Plan budget and Rs. 94 under the Plan budget. Besides these Children Homes, a number of Balwadi and creches are also being run with assistance from the State Government. However, the most important intervention on behalf of women and children is the I.C.D.S. programme which seeks to provide a whole package of services.

Intensive Child Development Scheme

The I.C.D.S. programme which aims at providing an integrated package of services of health, nutrition and pre-school education to children and women in most backward, rural, tribal and urban slum localities right at their doorsteps, provides the following services to children up to six years of age and expectant and nursing mothers.

1. Supplementary nutrition
2. Immunization
3. Health check-up
4. Referral services
5. Non-formal pre-school education

At the beginning of the Sixth Plan, 8 such projects were sanctioned. By the end of the Sixth Plan in 1984-85, 44 projects had been started in the state. In 1985-86, 16 new projects were sanctioned and in 1986-87, 24 new projects are being taken up. The expenditure has increased from Rs. 37.93 lakhs in 1980-81 to Rs. 185.42 lakhs in 1984-85. In 1985-86, the expenditure increased to Rs. 316.20 lakhs. During the 1986-87, a provision of Rs. 556 lakhs has been made in the budget. The vulnerable population covered under the scheme has increased from 1.61 lakhs in 1980-81 to 7.70 lakhs in 1984-85 and 13.02 lakhs in 1986-87. The comprehensive immunization cover (from 25,000 in 1980-81 to 2.90 lakhs in 1985-86), enrolment in the pre-school programme (from 16,000 in 1980-81 to 1.72 lakhs in 1985-86) and the coverage under the nutrition programme (from 43,000 in 1980-81 to 4.33 lakhs in 1985-86) has also increased dramatically during this period. Orissa is the first state which has developed material for the pre-school programme in collaboration with the S.C.E.R.T. Orissa is also the first state to have brought out an I.C.D.S. News Letter in which important aspects of child development and maternal care are discussed and functionaries up to the lowest level of the Anganwadi worker receive a copy of this News Letter. Orissa has also led the way in ensuring that adequate number of trained personnel are available even before the projects are sanctioned, thus reducing the time lag in making the project operational.

Nutrition Programme

In addition to the I.C.D.S. programme, the State Government have also provided a large Supplementary Nutrition Programme for children and women. The nutrition programme has two components, i.e., the Supplementary Nutrition Programme for

children up to 6 years and pregnant and nursing mothers, and the Mid-day meal Programme for school children. Not only has the State Government's Plan expenditure increased from Rs. 75 lakhs in 1980-81 to Rs. 199 lakhs in 1984-85 and Rs. 350 lakhs in 1986-87, but the State Government have also taken advantage of the Government of India's wheat-based programme to bring about a rapid expansion of the programme. The total coverage of beneficiaries under the programme has increased from 20.42 lakhs in 1980-81 to 21.53 lakhs in 1984-85. This has further increased to 29.53 lakhs beneficiaries in 1986-87.

Welfare of the Handicapped

The physically disabled persons constitute a particularly vulnerable part of the community. According to 1981 Census, there are 61,298 persons in Orissa who are totally handicapped. However, this does not include mentally retarded persons. Out of this population 21,625 are blind, 19,911 are orthopaedically handicapped and 13,762 suffer from hearing impairment. Besides these persons, a large number of people suffer from some form of partial disability. To prevent the physically disabled from becoming economically handicapped, it is necessary to mount comprehensive rehabilitation programmes for the disabled. Rapid socio-economic development in recent years has brought significant changes in the traditional community relationships in rural and urban areas. The break up of the traditional community support has necessitated greater intervention by the state in ensuring the welfare of the disabled. Since the beginning of the 6th Plan, the State Government have attempted to provide more comprehensive services to the disabled. At the beginning of the 6th Plan in 1980-81, the Plan expenditure was only Rs. 2.27 lakhs. This was increased to Rs. 14.98 lakhs at the end of the 6th Plan. From the beginning of the 7th Plan, the State Government have enhanced the plan expenditure from Rs. 15.98 lakhs in 1984-85, the last year of the 6th Plan, to Rs. 64.16 lakhs in 1986-87, an increase of more than 400 per cent. These programmes seek to provide physical rehabilitation through the extension of the medical infrastructure, aids and appliances as well as economic rehabilitation through formal education, vocational training and expansion of employment opportunities.

Aids and Appliances

Since 1985-86, the State Government is providing aids and appliances out of State Plan fund for a large number of beneficiaries. Against a provision of Rs. 85,000 in 1984-85, the

Plan allocation was increased to Rs. 13.11 lakhs in 1985-86 which has further increased to Rs. 15.41 lakhs in 1986-87. As the disabled find difficult to come to state hospitals for fitment of limbs and aids, a scheme for setting up fitment centres in all district hospitals of the state was launched in 1985-86. Six fitment centres were established in that year. Five more such centres are being set up in 1986-87. Two such centres will be set up in 1987-88. Thus, within three years, the State Government would have provided such facilities in all the districts of the state. Under the scheme, the Social Welfare Directorate provides the cost of construction of the building as well as the equipment required. The Health and Family Welfare Department have provided two Multi-purpose Rehabilitation Assistants. The different types of aids supplied during the last three years are as follows.

Aids	1984-85	1985-86	1986-87
1. Tri-wheelers	48	331	330
2. Hearing Aids	11	1,200	1,300
3. Prosthetic and Orthotic Aids	3,700	83,000	52,700
4. M C R Chappals	32 pairs	1,352 pairs	2,500 pairs

Disability pension

For those disabled who cannot be given the benefit of physical and economic rehabilitation, the State Government have introduced a Disability Pension Scheme from 2nd October, 1984. About 9,700 disabled persons have been granted a pension of Rs. 40/- per month, under the scheme. The State Government bear an annual expenditure of Rs. 49.50 lakhs on this account.

Education and Training for the handicapped

To provide facilities for formal education to the disabled, the State Government have introduced a scholarship scheme of its own since 1978. A sum of Rs. 9.00 lakhs have been provided in 1986-87 to benefit 2,500 students under the scheme from the primary school level onwards. Besides this, 780 students are also receiving scholarships under the Government of India scheme. Besides the Scholarship Scheme, there are 20 integrated schools where about 400 disabled children are receiving formal education. The most significant intervention in this field is the State Government's programme to open special schools for the handicapped in every district of the state. In 1984-85, there were three institutions run by the State Government and four schools run by voluntary agencies with assistance from the Social Welfare

Directorate. The Plan provision of Rs. 2.40 lakhs in 1984-85 has been enhanced to Rs. 16.21 lakhs to provide for residential education to nearly 400 students in 1985-86. Twelve new schools run by the voluntary agencies were opened during this year with grants from the Government. During 1986-87, seven more institutions have been started. In 1987-88, four more schools will be started. Thus, in the first three years of the Seventh Plan, every district in the state would have at least one school for the blind and one school for the deaf. The State Government provide the cost of maintenance as well as education of the child. These institutions are being given assistance for equipment as well as construction.

Along with formal education, it is also necessary to build up a cadre of trained personnel. With the increase in the number of special schools, the facilities for training teachers has also to be augmented. A course for teachers of the deaf has been started in collaboration with the Ali Yavar Jung National Institute for the Hearing Handicapped, Bombay, since August, 1986. Another training course for teachers of the blind will commence from February, 1987 in collaboration with the National Institute for Visually Handicapped.

Along with expanding the facilities for formal education, vocational training institutions have also been set up during the last two years. In 1984-85, there was one such training institution assisted by the State Government. During 1985-86, four new institutions have been set up through voluntary agencies. The State Government bear the expenditure on account of the salary of the trainers, stipend of the trainees, equipment as well as raw materials. By 1986-87, six institutions have been set up in the state.

Employment of the handicapped

Besides expanding the infrastructure for education and vocational training, a significant effort has also been made to provide gainful employment to the handicapped. In the rural areas, the anti-poverty programmes are being focused more directly on this group. The State Government have also launched a scheme for self-employment in urban areas where Urban Local Bodies are being assisted to provide Kiosks for disabled persons since 1984-85. A working capital subsidy is also being provided to the handicapped beneficiaries. Apart from the self-employment scheme, the State Government have also introduced reservation of 3 per cent of the posts in government offices and public undertakings since 1981. The reservation of posts extends up to Class II gazetted category of the State Government services.

Rehabilitation of cured leprosy patients

Leprosy is a cruel disease which not only disables a person physically but also makes him subject to social ostracism. The programme for rehabilitation of cured leprosy patients was ushered in as a state programme in 1981-82. A budget provision of Rs. 75,000/- was provided during that year. By the end of the Plan period, i.e., 1984-85, the annual Plan expenditure was raised to Rs. 7.03 lakhs. During the first 2 years of the 7th Plan, the provision for this programme has been augmented further. In 1985-86, Rs. 13.52 lakhs were spent from the Plan budget. In 1986-87, 14.71 lakhs have been provided. From 1985-86 onwards the State Government is providing the non-recurring as well as recurring expenditure for setting up vocational training units. 21 units were started in 1985-86, 4 more units are being started in 1986-87. Nearly 450 cured leprosy patients would receive vocational training in this scheme. The H. K. N. S. (Hind Kustha Nivarana Sangha) is being assisted for maintenance of cured leprosy patients in homes run by them. During the current year the maintenance grant has been increased from Rs. 3.50 per person per day to Rs. 5.00 per person per day. The H. K. N. S. is also being given assistance for development of placement services for the economic rehabilitation of cured leprosy patients. Since 1985-86, the State Government is providing multicellular shoes for cured leprosy patients. In 1985-86, nearly 1,200 patients were given shoes. During the current year 2,500 patients will be provided with these shoes.

Old Age Pension

An Old Age Pension Scheme has been in operation in the state since 1975-76. At the beginning of the 6th Plan in 1980-81, 61,000 beneficiaries were covered. By the end of the Plan period, i.e., 1984-85, more than 2 lakh beneficiaries were brought under the purview of the scheme. The rate of pension which was Rs. 25/- p.m. was enhanced to Rs. 40/- in 1982-83*. From 1st February, 1985, the Pension Rules were amended to extend the facility of the Old Age Pension to widows of 50 years and above. 7,500 widows are receiving the pension under the scheme in 1985-86.

Personal Accident Insurance Social Security Scheme

The Personal Accident Insurance Social Security Scheme for poor families was introduced by the Government of India from 15th August, 1985. This scheme which envisages the payment of a compensation of Rs. 3,000/- to poor families, in the event of the death of the earning member, was initially introduced in Balangir, Koraput and Kalahandi districts. 223 claims have been investigated and

* This has since been increased to Rs. 100/- per month

referred to the Insurance Company. More than 100 claims have been settled by the Insurance Company. The scheme has been extended during 1986-87 to the districts of Ganjam, Dhenkanal, Mayurbhanj and Kendujhar.

The last seven years have been a remarkable effort by the State Government in ensuring comprehensive facilities for the economic and physical rehabilitation of these vulnerable sections of society. It has, in deed, gone a long way in creating a society which cares poor people.

Family Oriented Anti-poverty programmes

(a) (I. R. D. P.)

Experience shows that the implementation of various plan schemes and normal development process did not percolate down below for the benefit of weaker sections of the society and those below the poverty line. As a result, even with increase in Gross National Product (G. N. P.) in the country the level of backwardness and the percentage of people below the poverty line did not diminish. The emphasis on infrastructural development up to the end of 5th Plan period mostly benefited the richer and more intelligent section of the society. Therefore, from the very start of the 6th Five Year Plan emphasis was shifted to family oriented anti-poverty programmes by preparing suitable schemes for each individual family below the poverty line. This programme is known as the Integrated Rural Development Programme (I. R. D. P.). To implement this programme the District Development Organisation had to be strengthened at the district level. A single agency called the District Rural Development Agency (D. R. D. A.) under the chairmanship of the Collector and with a class I officer of Orissa Administrative Service or a senior scale I. A. S. officer as the Project Director was constituted under the Societies Registration Act, 1860 which was made responsible for successful implementation of all the anti-poverty and Family Oriented Programmes. A number of subject matter specialists on Veterinary, Agriculture, Co-operation, Statistics and Industry were appointed as Additional Project Officers to assist the Agency in identification of families in the target group, preparation of plans for them, arranging credit support from Nationalised banks, monitoring the progress of implementation of the schemes and taking other follow-up action. This Agency replaced the previous agency called "Small Farmers Development Agency" (S. F. D. A.) started in the year 1978-79 which in its turn had replaced another similar Agency called the Marginal Farmers and Agricultural Labourers Agency (M. F. A. L. A) functioning in a limited scale from 1970-71. The latter two agencies had much smaller scale of assistance to be applied to a smaller number of schemes and beneficiaries. The concept of I. R. D. P. was introduced in the year 1978-79 in some

selected Blocks on an experimental basis towards the end of the 5th Five Year Plan. But it was extended to all the Community Development Blocks in the country including 314 Blocks of Orissa from Gandhī Jayanti day, i.e., 2nd October, 1980 as a Centrally sponsored scheme on 50:50 basis between the Centre and the State. A wide variety of schemes, such as, land development and reclamation, soil conservation, fishery, sericulture, horticulture, supply of bullocks, bullock-carts, agricultural implements and other agricultural inputs, supply of milch-animals, goats, sheep, pigs, ducks, poultry, construction of dug-wells, tubewells, community irrigation projects, establishment of small industries, development of rural artisans, extension of activities in tertiary sector were some of the schemes implemented under I. R. D. P. programme in rural areas. The target group consists of the poorest among the poor in rural areas like small and marginal farmers, share croppers agricultural and non-agricultural labourers, rural artisans, craftsmen, etc., whose family income from all sources does not exceed Rs. 3,500/-per year. Such beneficiaries are identified in a village meeting convened by the Sub-Collector concerned wherein local M. P./M. L. A. are called in among other dignified villagers. The programme involves identification of the target group by means of house-hold survey and assigning suitable schemes to them for their economic development by building up durable assets for which assistance in terms of credit, subsidy and facilities for marketing, etc., are provided and closely monitored from time to time until the economic status of the family is raised above the poverty line on a lasting basis. The pattern of assistance is 25 per cent subsidy for a non-tribal small farmer, 33 $\frac{1}{3}$ per cent for a non-tribal marginal farmer, agricultural labourer and others.

A small farmer is defined as a cultivator with land holding below 5 acres in un-irrigated areas and below 2.5 acres in irrigated areas. A marginal farmer is defined as a cultivator holding land upto 2.5 acres in un-irrigated area and 1.25 acres in irrigated area. An agricultural labourer is defined as a cultivator having no land-holding except homestead and who derives more than 50 per cent of his income through agricultural wages.

A tribal beneficiary is entitled to a subsidy of 50 per cent of the capital cost of the scheme. The rate of subsidy is also 50 per cent for community minor irrigation programme, for Fisherman Co-operative Societies and Co-operative Industries service and business beneficiaries. The balance amount is arranged by loan from the financing institutions located in the area on a differential rate of interest which is 4 per cent against the normal commercial rate of 18 per cent.

Under the IRDA scheme a target was fixed to raise 600 families per C. D. Block per year above the poverty line during the period of 6th Plan. The annual allotment of Rs. 6.00 lakhs per Block fixed in 1981-82 was raised to Rs. 8.00 lakhs per Block since 1982-83. Out of this 10 per cent can be spent for infrastructural development, $7\frac{1}{2}$ per cent for establishment and $82\frac{1}{2}$ per cent towards subsidy. During the 6th Plan 7,80,312 (including 1,43,964 Scheduled Castes and 1,62,825 Scheduled Tribes) beneficiaries have been assisted till March 1984 under IRDP against the target of 9,42,000. The coverage rose steadily over the years. From a modest coverage of 1,00,419 during 1980-81 the achievement rose to 2,17,073 beneficiaries during 1983-84.

(b) E. R. R. P.

Orissa is in the lowest wrung of backwardness so far as poverty is concerned. A survey for estimating the percentage of families below the poverty line undertaken by Government of India shows that the percentage of such people is the highest in Orissa (66.40 per cent) against the all India average of 48.13 per cent. There is yet no dependable criteria for determining the poverty co-efficient. However, a food-based yardstick has been adopted to define poverty line as "mid-point of the monthly *per capita* expenditure basis having an intake of 2400 calories per person in rural areas and 2100 in urban areas". At 1979-80 prices, these mid-points work out at Rs.76.00 for rural areas and Rs. 88.00 for urban areas. As bulk of the poor below the poverty line live in rural areas, the annual income limit of Rs. 3,500/- per family of 5 members was taken as the basis for indentifying a beneficiary under IRD Scheme (owing to steep increase in cost of living, the Central Government have recently announced to revise the poverty line from food-based criteria to income based criteria of monthly income of Rs. 500/- for a family of five). In view of the extreme poverty in Orissa the IRD programme sponsored to benefit the poor people was not considered sufficient to raise the economic level of the poorest of the poor class in Orissa. It was in this context that the State Government launched a special programme called the Economic Rehabilitation of Rural Poor (ERRP) from 1980-81 with a view to assisting above five lakh families to cross the poverty line over a period of five years. An ERRP beneficiary was defined to be a poor family whose total annual income from all sources does not exceed Rs. 1200/- and who has no income producing asset. This ERRP programme taken up in Orissa is different from IRD programme mainly on 3 counts:

- (1) The land based and fishery schemes are fully subsidised and the beneficiary does not have to take a loan.

- (2) In other schemes under Animal Husbandry and non-agricultural improvement sectors, the extent of subsidy is 75 per cent of the Unit cost against 25 per cent, 33.5 per cent and 50 per cent as the case may be, under IRD Schemes.
- (3) Where as expenses under IRD are shared 50:50 basis by the Centre and the State, ERRP is funded by pulling resources from various sectors like State Plan, Special Central assistance for the Scheduled Castes and the Scheduled Tribes, IRD, NREP, etc.

The number of families assisted during the last 5 years is given below.

Name of Schemes (1)	1980-81 (2)	1981-82 (3)	1982-83 (4)	1983-84 (5)	1984-85 (6)
1. Land based	13,650	22,966	12,327	32,000	8,543
2. Animal Husbandry	15,926	28,176	25,772	16,593	11,898
3. Fisheries	1,334	1,731	7,282	10,184	5,624
4. Non-Agricultural Employment Schemes including rural Industries	6,146	12,311	20,284	43,246	40,321
Total	37,056	65,184	65,665	1,02,023	66,386
Grand Total	3,36,314				

The backlog will be made up in 1985-86 for which a target of above 5 lakh beneficiaries has been fixed.

(c) N.R.E.P.

In the rural areas of Orissa landless agricultural labourers form the poorest section of the population. He gets employment for about 100 days in a year in the rainfed areas which accounts for about more than 80 per cent of the cultivated area. The Food for Work programme (F. F. W. P.) was conceived in January 1977 as a Centrally sponsored scheme for generation of additional employment opportunity in the rural areas by utilising the surplus foodgrains in the country and it continued upto October, 1980. This was revamped, reconstructed and re-named as a "National Rural Employment Programme" (N. R. E. P.) in October, 1980 for providing supplementary

employment opportunities to work-seekers during the lean employment periods of the year and thereby improve their nutritional status and strengthen the rural infrastructure. F. F. W. P. was being executed by giving only foodgrains to the labourers at subsidised prices. Under N. R. E. P. each labourer gets only 1 kg. of rice/wheat as part of his wage and the balance in cash. In order that the investment under this programme yields maximum benefits works are dispersed in the whole Block areas. Projects of afforestation, basic amenities to benefit S. T. /S. C. communities, small minor irrigation works, soil conservation, land development, etc., have been assigned priority under this scheme. Middlemen, such as contractors are eliminated and payment is made through muster-roll and work is executed either through village committee or the Panchayat Raj. Wage component for a project should not be less than 50 per cent of the project cost. The cost is shared on 50:50 basis between the Centre and the State. The Sixth Plan outlay under N. R. E. P. is Rs. 56.00 crores to be shared equally by the State and the Central Governments. But the likely expenditure may be of the order of Rs. 64.00 crores which would generate about 678 lakh man-days. In this programme till 1984-85 Social Forestry has been taken up in 4,516.25 hectares and the number of trees planted is 126.28 lakhs. 1,146 village tanks have been renovated. 278 community irrigation wells have been constructed and 795 numbers of drainage channels, field channels, flood protection works and anti-water logging structures have been constructed. 1,127 drinking water wells have been sunk. 8,258 school buildings, 143 dispensary buildings, 379 miscellaneous rural tanks have been constructed. 290 house-sites have been developed and 1,574 houses for the poor S. C. and S. T. houseless people have been constructed. Rural roads measuring 5,016 kilometres have been improved.

(d) R. L. E. G. P.

Towards the end of the Sixth Five Year Plan it was felt that the hard core of rural poverty pertaining to employment opportunity for the landless during the lean agricultural season has to be tackled in a more direct and specific manner. Therefore, a scheme "Rural Landless Employment Guarantee Programme" (RLEGP) was introduced in the state during the last part of the year 1983-84 as a Central plan scheme fully funded by the Government of India. This programme has two basic objectives, viz., (i) to improve and expand employment opportunities for the rural landless with a view to providing guaranteed employment to at least one member of every landless labourer house-hold upto 100 days in a year; (ii) creation of durable assets for strengthening the rural infrastructure which will lead to rapid growth of rural economy. Due to inadequate availability of infrastructure facilities in the state it was decided by the Government

to utilise the R. L. E. G. P. fund for creating basic infrastructure such as rural link roads, construction of building for primary school buildings, canal and river embankment roads, irrigation including creek irrigation, soil and water conservation and other development measures. Rs. 992.16 lakhs were utilised by the end of March, 1985. The total expenditure in April 1985 and May, 1985 was Rs. 263.54 lakhs. Hence the total expenditure upto the end of May is Rs. 1,255.70 lakhs. By utilising the above amount 666 kilometres of rural link roads have been improved, 1,454 hectares of agricultural land have been provided with lift irrigation facilities, 123 water harvesting structures have been constructed irrigating 1,017 hectares of land, social forestry programme has covered 1,320 hectares of land and 168 kilometres of river and canal embankment roads have been improved, 928 school buildings have been completed and 20 hectares of land have been covered with miscellaneous plantations.

Besides, a special programme for assistance to small and marginal farmers for increasing agricultural production was introduced in all the 314 C.D. Blocks of the state in 1983-84. The programme aims at providing assistance to small and marginal farmers for creating irrigation potential, ensuring better water management, developing fuel and fruit plantations, development of land and application of improved pulses and oil-seeds as well as fertilisers with a view to increasing agricultural production. For supply of improved pulses, oil-seeds and fertilisers the farmer does not incur any loan burden. He gets the inputs as grant. For creating irrigation potential, land development and plantation, the farmer has to raise a loan according to I. R. D. guidelines and subsidy is also available for the above programmes on I. R. D. pattern ranging from 25 per cent to 50 per cent. During the year 1984-85 a sum of Rs. 1,256.00 lakhs including Rs. 472 lakhs for the Tribal Sub-plan areas, was released to D.R.D.As. for implementing the programme. The D. R. D. As. have utilised the amount of Rs. 853.73 lakhs by covering 2,47,850 beneficiaries including 47,744 Scheduled Castes and 56,903 Scheduled Tribes by the end of March, 1985.

(e) TRYSEM

Another poverty eradication programme called "Training of Rural Youths for Self-Employment" (TRYSEM) was also introduced in the state as a part of the IRD programme with a view to providing self-employment opportunities for the rural youths. TRYSEM pre-supposes mainly three things for the rural youths to take up self-employment, i.e., short training course, credit facilities and marketing facilities. The objective was to train at least 40 youths per C. D. Block per year. During 4 years up to 1983-84, 21,243 youths have been trained with funds to the extent of Rs. 126.93 lakhs provided under the TRYSEM.

(f) SEEUY

Another scheme called "Self Employment for Educated Unemployed Youth" (S. E. E. U. Y.) has been introduced by Government of India with effect from the year 1983-84 under which an educated (matriculate or above) unemployed youth whose family income does not exceed Rs. 12,000/- per annum (since enhanced to Rs. 15,000/- from the year 1985-86) will be eligible to get cent per cent financial assistance in shape of grant (grant is limited to 25 per cent of the investment from the Government of India) and loan from the Nationalised Banks or the State Bank of India for starting and running any business or industry with investment not exceeding Rs. 25,000/-. The subsidy of 25 per cent will be reimbursed by the Government of India to the financing bank on claims. The loan is repayable in a period of 8 to 10 years depending on the type of the scheme with interest of 10 per cent per annum in backward districts and 12 per cent in other districts. The age of the beneficiary should be between 18 to 35 years. The scheme and the beneficiaries are sponsored by the District Industries Centre and 10 per cent are reserved for women and one per cent for physically handicapped entrepreneurs. The achievement under this scheme during the last two years is given below:

Year	No. of persons assisted	Amount involved in lakhs of rupees
1983-84	5,794	352.71
1984-85	6,778	1152.64

Legal aid to the poor

The guiding principle of our Constitution, i.e., justice, liberty and equality can be translated into reality if only the law's protection is promptly and readily available to the poor, socially handicapped and other weaker section of the society. Vast population of India are poor and backward. They have no chance, no knowledge and no means to enforce their legal rights against oppression and injustice inflicted upon them by other more influential members of the society. In a democracy, particularly with socialistic approach, there must exist a legal system in which inequalities in economic and social status would not preclude attainment of justice for the poor. Litigation in the present system is cumbersome, costly and time-consuming and therefore laws and law-courts created to dispense justice remain beyond the reach of the poor. Rights guaranteed by the Constitution, benefits offered by laws and promises given by the political parties remain as distant stars only to be gazed and not felt. To remove this social anomaly, Article 39-A was incorporated into our Constitution in its 46th Amendment which reads as

"The State shall secure that the operation of the legal system promotes justice on a basis of equal opportunity and shall in particular provide free legal aid by suitable legislation or scheme or in any other way to ensure that opportunities for securing justice are not denied to any citizen by reason of economic or other disabilities."

On 19th May, 1976 the Central Government constituted a committee and in accordance with its recommendation the Central Government established a Central Committee known as "Committee for Implementing Legal Aid Schemes" (C. I. L. S.) under the Chairmanship of Hon'ble Justice P. N. Bhagabati. The C. I. L. S. has since taken up a massive programme of promoting legal awareness among the weaker sections of the society by publication of pamphlets making documentary films, arranging discussion on radio and television, organising seminars and workshops in different parts of the country, organising programme of clinical legal education through legal aid clinics for law students, conducting training programmes for paralegal workers—all aimed at bringing about social justice awareness among the poor and illiterates of our country and also sensitizing the judges, the legal professionals, the social action groups and the people in general to the demands of the socio-cultural revolution contemplated by the Legal Aid Programme. The present Chairman of the Central Committee is Hon'ble Justice Ranganath Mishra of the Supreme Court of India.

The State Government in their turn have constituted a board called "the Orissa Legal Aid Advice Board" with Chief Minister as President and Chief Justice as Vice-President and various other officials and non-officials including Minister, Law, as Member. In accordance with the directive given in Article 39-A of the Constitution the State Government have formulated the "Orissa State Legal Aid and Advice Scheme, 1981" which was published in Law Department Notification No. 8012/L., dated the 5th May, 1981 for administering and implementing the legal aid programme in Orissa. The board have constituted several committees, namely, the High Court Legal Aid and Advice Committee, the District Legal Aid and Advice Committee, Subdivisional Legal Aid and Advice Committee and the Tahasil Legal Aid and Advice Committee in which important officials and non-officials work as Chairman, Vice-Chairman and Members. Each Committee has a Conciliation Cell, a Cell for Women, a Cell for the Scheduled Castes and the Scheduled Tribes. The function of each committee is to set up, administer and implement the legal services aid programme within the area for which it is constituted and take all such steps as would be necessary in accordance with the provisions of the scheme and the direction which

are from time to time to be issued by the board. Each person, whose total annual income from all sources, whether in cash or in kind or partly in cash or partly in kind, does not exceed Rs. 3,000 is eligible for legal aid and advice if he is a bonafide resident of the state of Orissa. But this limitation of annual income does not apply to the Scheduled Castes and the Scheduled Tribes, women and children. Besides, the committee may grant legal aid in cases of great public importance or in a test case the decision of which is likely to affect other persons belonging to the weaker sections of the community. The committee shall arrange legal aid and advice in all proceedings in any court and this legal aid is being given in shape of—

- (a) Payment of court fee, processing fees, expenses of witnesses and all other charges payable or incurred in connection with any legal proceedings;
- (b) representation of a legal practitioner in legal proceedings;
- (c) supply of certified copies of judgements, orders, notes of evidence and other documents in legal proceedings ;
- (d) preparation of appeal paper, books including printing and translation of documents; and
- (e) providing all legal documents.

The Legal Aid and Advice Board in its turn receives sufficient grant-in-aid from the State Government for implementation of the legal aid programme. This board has since held 276 camps for giving legal aid advice to eligible persons in various courts and in these camps as many as 6,746 applications have been received. Since its inception till the 31st August, 1985 the achievement of the Legal Aid and Advice Board is as follows :

Applications Allowed :

(a) S. C./S. T.	..	11,750
(b) Women	..	4,350
(c) Children	..	150
(d) Others	..	8,139
Total	..	24,389

Amount paid (in rupees) as Legal Aid

(a) S. C./S. T.	..	1,03,478
(b) Others	..	1,94,035
Total	..	2,97,513

Welfare of the Scheduled Castes and the Scheduled Tribes

The Scheduled Castes and the Scheduled Tribes generally form the most vulnerable and backward section of the society for whom state protection in various forms, such as, legal, fiscal and administrative has always been considered necessary. British Government did not do much for them except that transfer of immovable property belonging to Hill-Tribes within the Agency tract, i.e., in the district of Koraput and in the Agency area of Ganjam and in Baligurha subdivision was prohibited (unless made in favour of any other Hill-Tribe or with previous consent in writing of the Agent or any other authorised officer) under the Agency Tracts Interest and Land Transfer Act, 1917 (A. T. I. L. T. Act). The tribal communities received special mention for the first time in Government of India Act, 1935, where a reference was made to the "Backward Tribes". Certain tribes were specified as "Backward" in Assam, Bihar, Bombay, C.P., Madras and Orissa as per the 13th Schedule to Government of India (Provincial Legislative Assemblies) Order, 1936. The specification of tribe and tribal communities as "Scheduled Tribes" was finally made in the Constitution of India. In the Constitution (Scheduled Tribes) Order, 1950, 42 tribal communities were specified as "Scheduled Tribes and in the Constitution (Scheduled Castes) Order 1950, 92 communities were listed as Scheduled Castes respectively for the state of Orissa. Welfare of Scheduled Tribes assumed special significance and importance for Orissa as this state has the highest concentration of the Scheduled Tribes in India except Nagaland. Inside the state there are some pockets of heavy concentration of the Scheduled Tribes which have been specifically declared as Scheduled Areas under Part—C of the 5th Schedule of the Constitution of India. Specific provision has been made in the Constitution for protection of the interests of the Scheduled Tribes in the Scheduled Areas by formation of a Tribes Advisory Council whose duty is to advise the Governor on matters pertaining to the welfare and advancement of the Scheduled Tribes. Further it has been specifically provided that the Governor may direct any particular Central or State Act not to apply to a Scheduled Area or to apply to it with such exceptions and modifications as he considers necessary if the said legislation is not in the interest of the Scheduled Tribes. He can make Regulations for peace and good Government in the Scheduled Areas. So far as Orissa is concerned the Constitution (Scheduled Area) Order, 1950, specified the following areas of Orissa as Scheduled Areas—

- (1) Koraput district (except Kashipur Tahasil)
- (2) Entire Mayurbhanj district
- (3) Entire Sundargarh district

- (4) Ganjam Agency areas
- (5) Kondhmals and Baligurha subdivisions of Phulabani district except Chakapad Block.

The Scheduled Area Order, 1950, was revised in 1977 when some more areas were declared as Scheduled Areas. They are (1) Kashipur of Koraput district (2) Chakapad Block of Baligurha subdivision of Phulabani district (3) Kendujhar Tahasil, Telkoi Tahasil, Champua Tahasil, Barbil Tahasil of Kendujhar district (4) Thuamul-Rampur Tahasil and Lanjigarh Block of Kalahandi district (5) Nilagiri Block-I of Nilagiri Tahasil of Baleshwar district and Kuchinda Tahasil of Sambalpur district. As per 1981 Census the population in these Scheduled Areas is 72.73 lakhs representing 27.60 per cent of the total population of the state which is 263.70 lakhs. Its tribal population is 39.90 lakhs constituting 67 per cent of the total tribal population of Orissa.

There are 38.65 lakhs Scheduled Castes and 59.15 lakhs Scheduled Tribes population which together form roughly 37.09 per cent of the total population of the state. It goes without saying that special measures have to be taken in order that the drift of backwardness of the state is halted. All round development of the weaker sections of the community, specially Scheduled Castes and Scheduled Tribes is also constitutional obligation as enshrined in Article 46 of the Constitution in which both the State and Central Governments are involved. "Acceleration of programmes for the development of Scheduled Castes and Scheduled Tribes" has been adopted as an important point (point No.7) in the 20-Point "economic programme of the Prime Minister." The Harijan and Tribal Welfare Department of Orissa is in charge of this constitutional responsibility. Some of the important steps taken in this regard by the State and Central Governments are given below:

Economic Measures

(a) ITDA—From the beginning of the First Five Year Plan special efforts were made to narrow down the wide disparities that exist between socio-economic condition of the Scheduled Tribes and the rest of the population. In the 2nd Plan concentrated efforts were made to accelerate the pace of development through opening of four Special Multi-purpose Tribal Development Blocks. It was however, felt that intensive approach of the nature of SMPTD Blocks was essential to tackle the socio-economic needs of the tribal people as well as the tribal areas. Seventy-one Tribal Development Blocks in addition to 4 SMPTD Blocks were opened and they continued to function till the end of 4th Plan period. In view of the magnitude of the problems more intensive efforts were

needed to bridge the gap between the level of living of the Scheduled Tribes and the better off sections of the society. The progress of Tribal development programme was reviewed on the eve of the Fifth Five Year Plan by a Task Force set up by the Planning Commission. The Task Force recommended among others, that the tribal development programme should be given an integrated approach over larger areas than those covered by the Tribal Development Blocks. A new strategy in the form of Tribal Sub-plan was evolved aiming at a comprehensive development of the Tribal Areas with focus on individual family. Guidelines were issued by the Planning Commission and the Ministry of Home Affairs, Government of India, for preparation of sub-plan for tribal regions. Special central assistance for all round development of these Sub-plan areas and the Scheduled Tribes inhabiting therein flowed during Fifth and Sixth Five Year Plan in addition to substantial amount provided under the state Plan and the central Plan. The Tribal Sub-plan of Orissa was first prepared in 1974 and Orissa was the pioneer state in this regard. Now the sub-plan area covers the entire Scheduled Areas except Sorada Tahasil of Ganjam district. Out of 314 C.D. Blocks in the state, 118 Blocks, the tribal population of which is more than 50 per cent of the total population of the Block, come under the Sub-plan area which accounts for 44.21 per cent of the total area of the state.

To handle the multifarious problems of the tribal population coming within the new sub-plan areas, a new agency called Integrated Tribal Development Agency (ITDA) were set up with Collector as Chairman and a Senior Class—I Officer of O. A. S. or a Senior—Scale I. A. S. Officer as Project Director. Local M. Ps. /M. L. A.s were also involved as Members along with district heads of other Development Officers. An assessment of the progress made in the Fifth Plan indicated that on the whole the concept of the Tribal Sub-Plan embodying integrated and total approach to the problems of tribal development was good but there was noticeable gap between planning and implementation. Keeping the shortcomings in view the broad approach of the tribal Sub-plan strategy was slightly reoriented during the Sixth Plan period laying greater emphasis on specific objectives, namely—(i) raising the productivity levels in different fields of tribal economic activities with a view to enabling a targeted number of families to cross the poverty line (ii) development of human resources and upgradation of education (iii) elimination of exploitation through alienation of land, money-lending, debt bondage, trade, excise policy and forest regulations and (iv) development of critical infrastructure. Accordingly positive attention was paid during Sixth Plan period on family approach for development

as a result of which 4.91 lakh tribal families out of a total of 12.29 lakh tribal families in the state have been assisted in one shape or other by the end of 1984-85. The poverty amelioration programme was re-inforced with adequate provision for infrastructural development, spread of education, elimination of exploitation, etc. The flow of resources to the tribal sub-plan area during the Sixth Plan period from state Plan, central and centrally sponsored programmes and special central assistance would be of the order of Rs. 647.27 crores as against Rs. 275.25 crores during the Fifth Plan period.

(b) Micro Project—During the Fifth Five Year Plan, a decision was taken by the Government of India to the effect that the primitive tribal communities should be taken as a special category for whom specific programmes have to be initiated for their all-round development. Diagnostic research should be undertaken to evolve suitable strategies for their development and also for helping them in adjusting themselves to the new socio-economic forces of change. As a first step for ensuring this policy of Government the primitive tribes were indentified on the basis of their pre-agricultural economy, low level of literacy, low growth rate and inhospitable and isolated habitat. Twelve such tribal communities of the state of Orissa have been identified as primitive tribes with the approval of the Government of India. They are (i) Juang, (ii) Bonda, (iii) Kutia Kondh, (iv) Dongria Kondh, (v) Paudi Bhuiyan, (vi) Saora, (vii) Lanjia Saora, (viii) Didayi, (ix) Birhor, (x) Mankidia, (xi) Kharia, (xii) Lodha. Besides these twelve tribal communities, there are also a few tribal communities who deserve to be declared as such.

To ensure special attention for their development, eleven Micro Projects covering eight primitive tribal communities have been set up as detailed below.

- (i) Paudi Bhuiyan Development Agency at Jamardihi for Paudi Bhuiyans.
- (ii) Paudi Bhuiyan Development Agency at Khutagan for Paudi Bhuiyans.
- (iii) Juang Development Agency at Gonasika for Juangs.
- (iv) Lanjia Saoras Development Agency at Serang for Lanjia Saoras.
- (v) Thumba Development Agency at Thumba for Lanjia Saoras.
- (vi) Saora Development Agency at Chandragiri for Saoras.
- (vii) Bonda Development Agency at Mudulpada for Bondas.

- (viii) Dongria Kondh Development Agency at Chatikona for Dongria Kondhs.
- (ix) Lanjia Saora Development Agency at Puttasingi for Langia Saoras.
- (x) Kutia Kondh Development Agency at Belghar for Kutia Kondhs.
- (xi) Lodha Development Agency at Baripada for Lodhas.

These Micro Projects are made to refine and improve upon the traditional vocation of primitive tribals residing in the Micro Project areas while planning for their social and economic development. Unlike the tribes of other areas, these primitive tribes residing in the project areas get cent per cent subsidy in individual family oriented schemes due to their extreme backwardness. The projects also aim at developing the core economic sectors like agriculture, horticulture, soil conservation, animal husbandry. Besides, facilities of drinking water, education and health are also being provided in these projects. Since 1979-80 till the end of 1984-85, a sum of Rs. 274.00 lakhs has been spent for implementation of different development programmes in Micro Projects benefitting 6,015 families under individual benefit oriented schemes.

(c) MADA —ITDAs/Micro Projects being situated in Sub-plan areas do not specifically give benefit to the tribals living outside the Sub-plan areas. As stated earlier there are about 19.25 lakh tribals living outside the Sub-plan areas. Therefore during the Sixth Plan period beginning from 1978-79 till 1983-84, 37 pockets of tribal concentrations (each pocket having a total population of 10,000 or more of whom 50 per cent and above were tribals) were indentified in the state for all-round development of dispersed tribals living outside the Tribal Sub-plan Areas. These pockets are known as "Modified Area Development Project" (MADA). Special central assistance allotted for MADA pockets is being utilised for MADA programmes as well as for ERRP schemes. Out of a total allocation of Rs. 548.29 lakhs during the period from 1980-81 to 1984-85, Rs. 348.29 lakhs has been spent for implementation of MADA programmes and the balance of Rs. 200.00 lakhs for coverage of S.T. families under ERRP in MADA pockets. Since inception of MADA programme till 1984-85, 17,696 families have been covered.

Thus it can be seen in Orissa several Development Agencies (21 ITDAs and 11 Micro Projects in Sub-plan Areas and 37 MADA pockets in non-Sub-plan areas) have been started during Fifth and Sixth Plan periods for all-round development of the tribals and tribal areas for

whom substantial financial outlays have been provided by the state and the central Government to discharge their constitutional obligations. But in spite of the fact that the Sixth Plan has made positive strides in the field of tribal development there are many lapses and shortcomings which need to be rectified in the coming plan periods. Ninety per cent of the tribal families, i.e. about 11 lakh S.T. families were anticipated to be below the poverty line of whom 4.91 lakhs have been financially assisted under various anti-poverty programmes during the Sixth Plan period. As such 6.09 lakh S.T. families have not been given any assistance although they were below poverty line. No survey has so far been conducted to find out how many of the assisted families have crossed the poverty line. An evaluation study made in 6 ITDAs, shows that on an average 25 per cent of the assisted families have crossed the poverty line. It could be presumed that 1.23 lakhs out of 4.91 lakhs assisted families have crossed the poverty line which stood at Rs. 3,500/- per family per year at 1978-79 prices. The remaining 3.68 lakh S.T. families need a second or supplementary dose of assistance during the Seventh Plan period. In addition 6.09 lakh uncovered families have to be newly covered. If the revised criteria of Rs.6,000/- annual income per family is considered, then practically all the tribal families will come under scope of amelioration of anti-poverty programmes during the seventh and subsequent Plan periods, even if some of them have already been assisted. The benefits from heavy investments made during the last decade or so are not likely to reach the target group if effective measures are not taken to improve the quality of personnel administering the welfare measures. This again depends on infrastructural development like housing, roads, electricity, communication, educational facilities, etc. No doubt special attention has been given for development of infrastructure in tribal areas but it will take a long time to bring such areas, most of which still remain inaccessible and unhealthy, on par with the advanced areas. The Seventh Finance Commission have recommended Rs.787 lakhs for up-gradation of the standard of administration in tribal areas including grant of incentives to officers to attract right type of motivated people to serve in the tribal areas.

(d) S.C.P. —Unlike Scheduled Tribes, Scheduled Castes are not concentrated in any part of Orissa. They are dispersed. Village life invariably consists of some Scheduled Caste families along with other castes. These Scheduled Castes are in the lowest strata in the village hierarchy and they suffer from social and economical disabilities. The Plan programmes executed in the rural areas do not specifically benefit these Scheduled Caste families. Therefore from the beginning of the Sixth Plan period it was felt that besides family oriented programmes basic essential facilities and services

should be provided in Scheduled Caste *bastis* in the village to ameliorate their living conditions. Special Component Plan (SCP) has been formulated and implemented qualifying flow of funds from State plan, Central and Centrally sponsored schemes and Special Central Assistance made available by the Government of India for this specific purpose. The Scheduled Caste families are assisted under various income generating schemes based on their traditional occupational pattern like weavers, leather-workers, fishermen, cultivators, sericulturists, etc.

During the Sixth Plan period, the Government of India indicated to assist at least 50 per cent of the Scheduled Caste families living below the poverty line. Against the target of 4 lakhs of Scheduled Caste families to be covered during the Plan period, as many as 4,59,331 Scheduled Caste families were assisted under different anti-poverty programmes like ERRP, IRDP and schemes funded out of special central assistance and State Plan. During the same period 410 S. C. *bastis* have been electrified, 1669 street lights and 6,776 drinking water supply sources provided in those *bastis*. 36,123 house-sites have been given to S. C. families, 1,934 dry latrines converted to flush sanitary latrines, housing facilities given to 818 S.C. families and 13,857 families assisted under environmental improvement of slums in urban areas. The flow of funds to the Special Component Plan during the Sixth Plan from State Plan and centrally sponsored schemes and Special Central Assistance is of the order of Rs.183.00 lakhs of rupees.

(e) **LAMPS and Co-operative Corporations**—In accordance with the recommendations of the "Bawa Committee" (1971) the Primary Agricultural Credit Co-operative Societies functioning in Tribal Sub-plan areas were organised into 222 Large sized Agricultural Multipurpose Societies (LAMPS) to provide a package of services to tribal members at a single contact point, such as credit, marketing, supply of inputs, supply of consumer goods, etc. Since the inception of the LAMPS concerted efforts were made to strengthen them in the Sub-plan areas though they could not be made as effective as they were intended to be. These LAMPS were given financial assistance to the extent of Rs.264.43 lakhs from the State Plan and Rs.192.75 lakhs from the Special Central Assistance. By the end of 1984-85 the membership of these LAMPS consisted of about 7 lakh members. The Tribal Development Co-operative Corporation (TDCC) has been established whose main objectives are to purchase surplus agricultural produce of the tribals and the minor forest produces collected by them at a fair price and arrange for their marketing and to supply essential commodities and other consumer goods through Fair Price Shops in tribal areas. The TDCC is functioning as the APEX Co-operative Organisation

in respect of LAMPS in Sub-plan areas of the state. Out of 222 LAMPS in Sub-plan areas 202 LAMPS have already been affiliated as primaries of TDCC and they are actively associated with the procurement programme of agricultural produce and minor forest produce for the Corporation. During 1980—84 (July to June) the TDCC has procured surplus agricultural produce and minor forest produce worth Rs. 536.70 lakhs and Rs. 501.73 lakhs respectively. Transactions worth Rs. 506.33 lakhs in consumer goods have been made during the said period.

To lessen the loan and interest burden of the Scheduled Caste families covered under anti-poverty programmes, the Orissa Scheduled Caste Financial Co-operative Corporation has been established which plays a catalyst role in providing missing financial inputs required to improve the economic condition of the poor Scheduled Castes. It also offers similar service to the Scheduled Tribes. This corporation provides margin money up to 25 per cent of the unit cost to Scheduled Caste beneficiaries and up to 15 per cent of the unit cost to Scheduled Tribe beneficiaries in respect of schemes having non-recurring cost not exceeding Rs. 12,000/- at a concessional rate of interest of 4 per cent chargeable with one year moratorium. At the end of May 1985, the corporation has provided margin money assistance in favour of 75,463 Scheduled Caste and 6,707 Scheduled Tribe families amounting to Rs. 392.98 and Rs. 28.20 lakhs respectively.

Regulatory Measures

Conservation of the benefits accrued to the S. T. and S. C. beneficiaries under various programmes depend upon strict enforcement of the protective laws and regulations. The interests of the tribals are to be safeguarded on land, agriculture, forestry, etc. In addition to general laws which are applicable to the Scheduled Areas specific regulations have been framed to save the tribals from various forms of exploitations by unscrupulous traders and other more intelligent and well-to-do sections of the society. Among others, the most important enactments are:—

- (i) The Orissa (Scheduled Areas) transfer of immovable property (by Scheduled Tribe) Regulation, 1956 (Regulation 2 of 1956)
- (ii) The Orissa Land Reforms Act, 1960
- (iii) The Orissa Money-lenders Act, 1939 (as amended in 1975)
- (iv) The Orissa (Scheduled Areas) Money-lenders Regulation, 1967

- (v) The Bonded Labour System (Abolition) Act, 1976
- (vi) The Orissa Protection of Scheduled Castes and Scheduled Tribes (Interest in Trees) Act, 1981
- (vii) The Orissa Debt Relief Act, 1980
- (viii) The Orissa Reservation of vacancies in posts and services (for Scheduled Castes and Scheduled Tribes) Act, 1975
- (ix) The Protection of Civil Rights Act, 1955.

Some salient features of the above enactments so far as Scheduled Tribes/ Scheduled Castes are concerned are given below:

(a) Alienation of land—The fundamental right to hold and dispose of property given in Article 19 of the Constitution of India is restricted to the extent that the state can make any law imposing reasonable restrictions on the exercise of that right for the protection of the interest of any Scheduled Tribe. Part B of the fifth schedule of the Constitution authorises the Governor to make Regulations which may prohibit or restrict the transfer of land by a member of the Scheduled Tribe in a Scheduled Area. Scheduled Areas Transfer of Immovable Property Regulation 1956 has been promulgated and enforced in the Scheduled Areas of the state with effect from the 4th October, 1956. This Regulation prohibits transfer of immovable property by a member of the Scheduled Tribe unless the transfer is made in favour of another member of a Scheduled Tribe or with previous consent in writing of the competent authority, namely, Sub-Collector. Any person who is not a member of the Scheduled Tribe, if found to be in possession of such property in contravention of the provisions of the Regulation, shall be liable to ejectment and the land will be restored to the transferor or his heirs. In addition, the transferee shall be liable to a penalty for an amount not exceeding Rs. 100/- per acre for each year of his unlawful possession. This Regulation further provides that in execution of money decree in case of a member of the Scheduled Tribe, his right, title or interest in the land shall not be liable to be attached or sold. Further any surrender or relinquishment shall be deemed to be a transfer of land within the meaning of the Regulation. Before enforcement of this Regulation, a somewhat similar law existed for Koraput district and the Agency areas of Ganjam district including Baligurha subdivision under the Agency Tracts Interest and Land Transfer Act, 1917 ((ATILT Act). Another law also existed for the ex-C. P. areas, namely, Jharsuguda, Sambalpur, Baragarh and Padmapur subdivisions of Sambalpur district and Nuaparha subdivision of Kalahandi district by amendments to the C. P. Tenancy Act, 1898 and 1920 made in the year 1953. For the ex-state areas a similar provision prohibiting transfer of land

existed in the Administration of Orissa State's Order, 1948, which was repeated in the Orissa Merged State (Laws) Act, 1950 which provided that no transfer of holding from a member of aboriginal tribe to a member of non-aboriginal tribe shall be valid unless such transfer is made with previous permission of the Subdivisional Magistrate concerned. An aboriginal tribe was defined as a tribe that may be notified as such by the State Government from time to time. But no notification was issued till the year 1962. So practically this provision of Orissa Merged State (Laws) Act in the ex-state areas remained inoperative till 1962. Regulation 2 of 1956 repealed the ATILT Act and the corresponding provisions in the Merged State (Laws) Act so far as they related to Scheduled Areas. But there was no law prohibiting transfer of land by Scheduled Castes in any part of the state or by a Scheduled Tribe in a non-Scheduled area except those mentioned above till the Orissa Land Reforms Act, 1960 came into force throughout the state of Orissa with effect from the 1st October, 1965. This Act made provisions similar to those provided for in Regulation 2 of 1956 to protect the interests of the Scheduled Tribes in non-Scheduled areas and all the Scheduled Castes throughout the state of Orissa in sections 22, 22-A, 23, 23-A and 23-B. The 12-year rule of the law adverse possession in the Limitation Act 1963 was not made applicable to lands of Scheduled Tribes and Scheduled Castes. The transferer has to prove that he has protected his title by adverse possession for 30 years or more. Further that the onus of proving that the transfer was valid shall lie on the transferee notwithstanding anything contained in any other law for the time being in force. In spite of such stringent provisions of law instances of concealed transfers are not rare. Transfers have also been freely allowed in many cases, particularly in the developing areas of the state where Scheduled Castes and Scheduled Tribes held their ancestral lands or lands had been settled with them under various benevolent programmes like land to landless, ceiling surplus lands, Chowkidari Chakran lands, etc. Whenever any scheme of development takes place or is about to take place in any area the richer people from the urban areas descend upon the developed or developing areas and persuade the Scheduled Castes and Scheduled Tribes to sell away their lands at throw-away prices with the permission of the competent authority, namely, Tahasildar/S. D. O. which they sell at exorbitant rates later on and make huge profits. It is, therefore, absolutely necessary that ownership of Government lands settled with Scheduled Castes and Scheduled Tribes and other weaker section of the society should be made absolutely non-transferable. The State Government have constituted a Committee on Social and Protective Legislation under the Chairmanship of Member, Board of Revenue. This Committee has made some important

recommendations which will be discussed in the ensuing Tribes Advisory Council. Under these two enactments the achievement till the end of March 1985 is as follows:—

Under Regulation 2 of 1956

Cases in which land restored	..	30,593
No. of beneficiaries	..	31,109
Area restored (acres)	...	35,826

Under Sections 23 and 23-A of Orissa Land Reforms Act, 1960

Cases in which land restored

(a) S. C.	..	6,865
(b) S. T.	..	3,959

Total		10,824
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No. of Beneficiaries

(a) S. C.	..	8,459
(b) S. T.	..	4,231

Total		12,690
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Area Restored

(a) S. C.	..	6,862 acres
(b) S. T.	..	6,385 acres

Total		13,247 acres
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(b) Liquidation of Rural Indebtedness—As a final measure towards liquidation of rural indebtedness, the State Government have taken steps to enact a Debt Relief Legislation in order to extend the benefit to small farmers (including marginal farmers) whose total land is not more than one standard acre, and the landless agricultural labourers and rural artisans of the state whose total annual income does not exceed Rs. 2,400. Accordingly, the Orissa Debt Relief Act, 1980 came into force with effect from 13-3-1981. This Act contains provisions to the effect that every debt incurred by the Scheduled Debtors before 13-3-1981 including the amount of interest, if any, payable on such debt shall be deemed to have been wholly discharged and no civil court shall entertain any suit of proceedings against the Scheduled Debtors for recovery of debt and interest. All suits and proceedings for the recovery of any debt or interest against Scheduled Debtors shall abate. Besides every property pledged by a Scheduled Debtor shall stand discharged in favour of such debtor and the creditor shall be bound to return the same to the debtor forthwith. Any agreement

whether entered into before or after 13-3-1981 with the Scheduled Debtor requiring him or his family members to work as a labourer or otherwise in lieu of debt shall be void. There is also provision for imposition of penalty for violation of the provisions of the Act.

A moratorium on recovery of debts was initially imposed for a period of two years with effect from 22-9-1975 in favour of indigent debtors and subsequently extended from time to time for a period of one year at a time. The moratorium last extended expired on 21-9-1981.

Progress on liquidation of rural indebtedness and moratorium on recovery of debt from landless labourers, small farmers and artisans belonging to S. C./S. T. up to March 1984 is given below:

Nature of relief	No. of persons benefited	
	Sch. Castes	Sch. Tribes
1. Moratorium on recovery of debt	54	21
2. Discharge of possessory mortgage	254	229

The Orissa (Scheduled Areas) Money-lenders' Regulation 1967 was brought into force with effect from the 1st November 1969 in order to control and regulate the business of money-lending in the Scheduled Areas of the state. In non-Scheduled Areas of the state regulatory control was effected through the Orissa Money-lenders' Act, 1939 which underwent extensive amendments in 1975 with a view to controlling money-lending business in rural areas and giving substantial relief to poor debtors. No money-lender can charge interest at a rate exceeding 9 per cent on a secured loan and twelve per cent on unsecured loan and in any case the interest on any loan in excess of the principal is not chargeable or recoverable. All possessory mortgages stand discharged after expiry of a period of seven years from the date of mortgage and money-lender shall deliver back the mortgaged land along with all relevant documents free from all encumbrances created by him within a period of three months from the date of expiry of the period of seven years. Violation of the provision of this Act attracts penalty of imprisonment up to one year and fine up to one thousand rupees and the offence is triable by the S.D.O. (designated as Sub-Collector) and not by the judiciary.

(c) Reservation in Services—The Orissa Reservation of Vacancies in Posts and Services (for S. Cs. and S. Ts.) Act 1975 and the Rules framed thereunder came into force with effect from 1-7-1976 to tighten up measures for securing increased representation of S. Cs. and S. Ts. in services. Important changes have been made in the said Act under the Orissa Reservation of Vacancies in Posts and Services (for S. Cs. and S. Ts.) Amendment Act, 1982. These are,

- (a) All local or other authorities within the state or under the control of the state have been included under the purview of the Act.
- (b) The percentage of reservation both in initial and promotional appointment shall be equal, i.e., 23 per cent for S. Ts. and 15 per cent for S. Cs. (in proportion to their percentage to the total population of the state).
- (c) All appointments made in contravention of the provisions of this Act shall be treated as voidable.

As on 1-4-1983 the percentage of representation of S. Cs. and S. Ts. was 2.02 per cent and 1.35 per cent in Class-I posts, 2.33 per cent and 1.25 per cent in Class-II posts, 9.13 per cent and 6.06 per cent in Class-III posts and 17.39 per cent and 9.97 per cent in Class-IV posts respectively in respect of State Government posts and services. As far as their representation in corporate, local bodies, etc., it was 0.25 per cent and 0.25 per cent in Class-I, 0.94 per cent and Nil in Class-II, 6.30 per cent and 2.41 per cent in Class-III and 42.55 per cent and 4.65 per cent in Class-IV posts for S. C. and S. T. respectively. They have to go a long way to advance themselves educationally to fill up the reserved vacancies.

(d) Protection of interest of Tribals over trees on their holdings—The Tenancy Law of the state gives unfettered right to raiyats over trees standing on their holdings. Taking advantage of the ignorance and poverty of the tribals unscrupulous traders have been purchasing trees standing on the holdings of the tribals at throw-away prices and selling them at much higher prices at important marketing centres. The Orissa Protection of S. C. and S. T. (Interest in Trees) Act, 1981 came into force since September, 1983, with an objective to provide for the protection of the members of the S. Cs. and S. Ts. from exploitations in the matter of transfer of their interest in specified trees. The Act provides that no contract entered into after the commencement of this Act, by an owner of any specified tree for the sale of the timber thereof shall be valid if such owner is a member of the S. C. and S. T. and if the contract has been entered into without permission in writing granted by the Range Officer on an application made on this behalf giving adequate description of the timber proposed to be sold.

(e) Protection of Civil Rights—The Constitution proclaims that untouchability in any form is abolished and its practice in any form is forbidden. Enforcement of disabilities arising out of untouchability

shall be an offence punishable under law. To create a machinery for punishment for the practice of untouchability and for the enforcement of any disabilities arising therefrom the protection of Civil Right Act, 1955, was passed which came into force from 1st June, 1955. Under this Act punishments were provided for enforcing religious and social disabilities and for other offences arising out of untouchability. Unlike what was happening in the past, Harijans (S. Cs.) and Girijans (S. Ts.) now enter any place of public worship, can have access to any shop, hotel, restaurant or place of public entertainment, can practise any profession, carry on any occupation or take up any employment in any job, can use any river, stream, well, water-tap, bathing ghat, burial ground, road, hospital, Dharmasala, Sarai or Musafirkhana or any other place of public resort without let or hindrance. A shop-keeper or a hotel-keeper can no longer refuse to sell goods or render any service to any person on the ground of untouchability. Violation of the provisions of the Act is a cognisable offence which is triable summarily. Legal aid is being provided for enforcement of the civil rights under the Act.

(f) Settlement of Land—Under the Orissa Land Reforms Act, the Scheduled Tribes and the Scheduled Castes get pre-emptive right to get settlement of ceiling surplus lands on nominal Salami of only Rs. 400/- per standard acre (i.e., one acre of double cropped irrigated land, $1\frac{1}{2}$ acres of single cropped irrigated land, 3 acres of rain-fed paddy land and $4\frac{1}{2}$ acres of other lands) to be paid in 10 annual instalments. This Salami has now been completely waived since the 31st October, 1985, the first death anniversary of the late Prime Minister, Srimati Indira Gandhi. 70 per cent of ceiling surplus lands vested in Government have to be settled with them only and each family gets up to 0.70 standard acre. During the last 10 years ending 1985-86 out of a total of 1,06,679 beneficiaries of ceiling surplus land as many as 76,728 S. Ts./S. Cs. have got 96,816 acres of ceiling surplus lands. But mere allotment of land will not enable them to build up viable assets unless they have finance to develop the land (where development is necessary), and to purchase bullocks and agricultural inputs like seeds and fertilisers. The Central Government and the State Government have been giving financial assistance to the beneficiaries since the year 1975-76 at the rate of Rs. 1000/- per hectare which has been increased to Rs. 2500/- per hectare from the year 1984-85. Till the end of 1984-85 the Central and the State Governments have released 2.88 crores for this purpose.

Besides, landless S. Ts. /S.Cs. also get preferential treatment in allotment of Government waste lands and in settlement of unobjectionable encroachment lands up to one standard acre under provision

of the Orissa Government Land Settlement (O. G. L. S.) Act and the Orissa Prevention of Land Encroachment (O. P. L. E.) Act free of Salami. From the year 1974-75 to 1984-85, 1,90,286 S. Ts. and 84,168 S. Cs. have been allotted 3,40,376 acres and 1,55,009 acres respectively for agricultural purposes. Besides, during the same period 1,06,017 S.Ts. and 89,099 S.Cs. who had not homesteads of their own have been given 6,119 and 6,274 acres of homestead lands under the anti-poverty programme of land to landless and house to houseless.

(g) Prohibition—The economic and social backwardness of the tribal people and Harijans (S. Ts. and S. Cs.) is mainly due to their excessive drinking habit. The money they earn from physical labour and other sources are quickly spent in purchasing liquor from the excise vendors. This habit also results in neglecting their family, domestic unhappiness and health hazards. As the habit is ingrained in their social system and physical constitution (even children and women are not free from this social evil), it is not easy to persuade them to give up the drinking habit or to enforce prohibition. A healthier system of supply of liquor through the distillery system has been introduced in the district of Ganjam with effect from the 1st April 1975, in the districts of Sundargarh, Cuttack and Puri from the 1st April 1976, and in the districts of Koraput, Dhenkanal, Kendujhar and Mayurbhanj with effect from the 1st April 1977 and in the remaining districts with effect from the 1st April 1978. There are no country spirit shops in Ganjam Agency area and in Kondhmal and Baligurha subdivisions of Phulabani district. Some concessions have been allowed to the Tribals u/s. 94 of the Bihar and Orissa Act to manufacture and possess country spirit for their own *bonafide* consumption and use in social and festive occasions and not for commercial purpose. In accordance with the recommendation of the Central Prohibition Committee, the State Government adopted a policy of progressive closure of liquor shops in tribal concentrated areas. Liquor shops are not allowed to be located within the 500metres from the place of Harijan *bastis*. Sale or supply of liquor to persons below 21 years of age has been banned. Under the excise policy of 1985-86 no new excise shop was allowed to be opened during that year. Regular raids are undertaken to detect illegal possession of liquor and the offenders are prosecuted and penalised. But as stated above enforcement of prohibition measures are very difficult to achieve and the Tribals and Harijans have not yet been weaned away from the ruinous habit of the social evil of drinking.

APPENDIX I

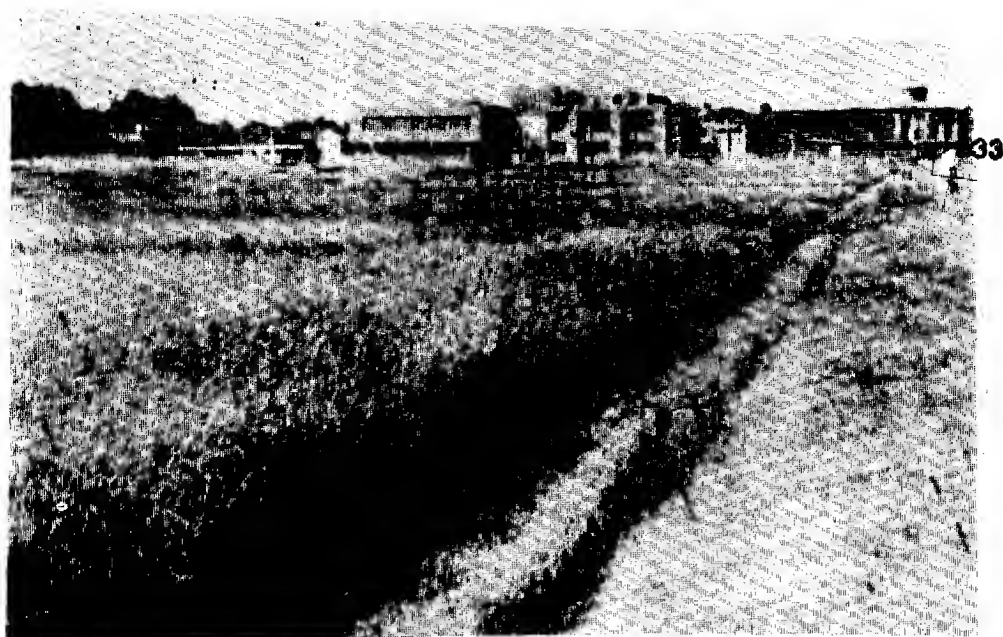
Name of some institutions on music and dance

Sl. No.	Name of the institution	Year of establishment
(1)	(2)	(3)
1	Rajadhani Kala Sansad, Bhubaneshwar ..	1958
2	Sangeet Kala Pratisthan, Puri ..	1953
3	Pranati Kala Mandir, Puri ..	1957
4	Shyama Sundar Sangeet Mahavidyalaya, Puri	1970
5	Laxman Naik Sangeet Akademi, Bhubaneshwar	1964
6	Bhubaneshwar Kala Kendra, Bhubaneshwar	1955
7	Orissa Sangeet Parishad, Puri ..	1936
8	Lalit Kala Pitha, Bhubaneshwar ..	1955
9	Gokul Chandra Sangeet Sadan, Kendraparha	1964
10	Kalinga Cultural Academy, Chaudwar ..	1972
11	Gandhiji Sangeet Kala Mandir, Kabisuryanagar	1948
12	N.A.C. Kalavikash Kendra, Asika ..	1955
13	Manmohan Sangeet Parishad, Bhadrak ..	1954
14	Nrutya Sangeet Kalamandir, Baleshwar ..	1956
15	Mayurbhanj Chhau Nrutya Pratisthan, Baripada	1951
16	Kala Parishad, Baripada ..	1952
17	Rengaibada Chhau Nrutya Pratisthan, Mayurbhanj ..	1930
18	Pragati Chhau Nrutya Parishad, Kosta, Mayurbhanj ..	1948
19	Badra Chhau Nrutya Pratisthan, Badra, Mayurbhanj ..	1950
20	Kishore Kala Mandal, Jaypur ..	1952
21	Prema Latika Kala Bhawan, Kendujhar ..	1952
22	Bharati Sangeet Natak Anusthan, Bhawanipatna ..	1971
23	Ganjam Kala Parishad, Brahmapur ...	1959

APPENDIX II

Number of Hospitals, Dispensaries, Public Health Centres, etc., in Orissa (District-wise) during 1981-82

District	Hospital	Dispensary	PHC	FAC	MAC	MHU	SHC	MH Centre	Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1. Balashwar	09	30	19	1	8	..	4	1	72
2. Balangir	12	5	20	..	6	1	..	..	44
3. Cuttack	21	38	41	..	15	..	12	..	127
4. Dhenkanal	16	11	16	..	3	7	2	..	49
5. Ganjam	20	31	29	..	5	2	4	..	91
6. Kalahandi	16	4	18	..	2	1	4	..	45
7. Kendujhar	11	7	13	..	2	2	..	4	39
8. Koraput	12	17	42	1	1	1	..	5	79
9. Mayurbhanj	14	8	26	..	3	2	..	6	59
10. Phulebani	10	12	15	..	4	2	..	..	43
11. Puri	27	27	29	..	8	..	10	..	101
12. Sambalpur	21	19	29	..	8	1	3	2	83
13. Sundargarh	11	8	17	..	5	1	1	6	49
Total	200	217	314	2	70	14	40	24	881



High Yielding Paddy Cultivation, C.R.R.I. Farm, Bidyadharpur

Courtesy— I.& P.R. Department, Orissa



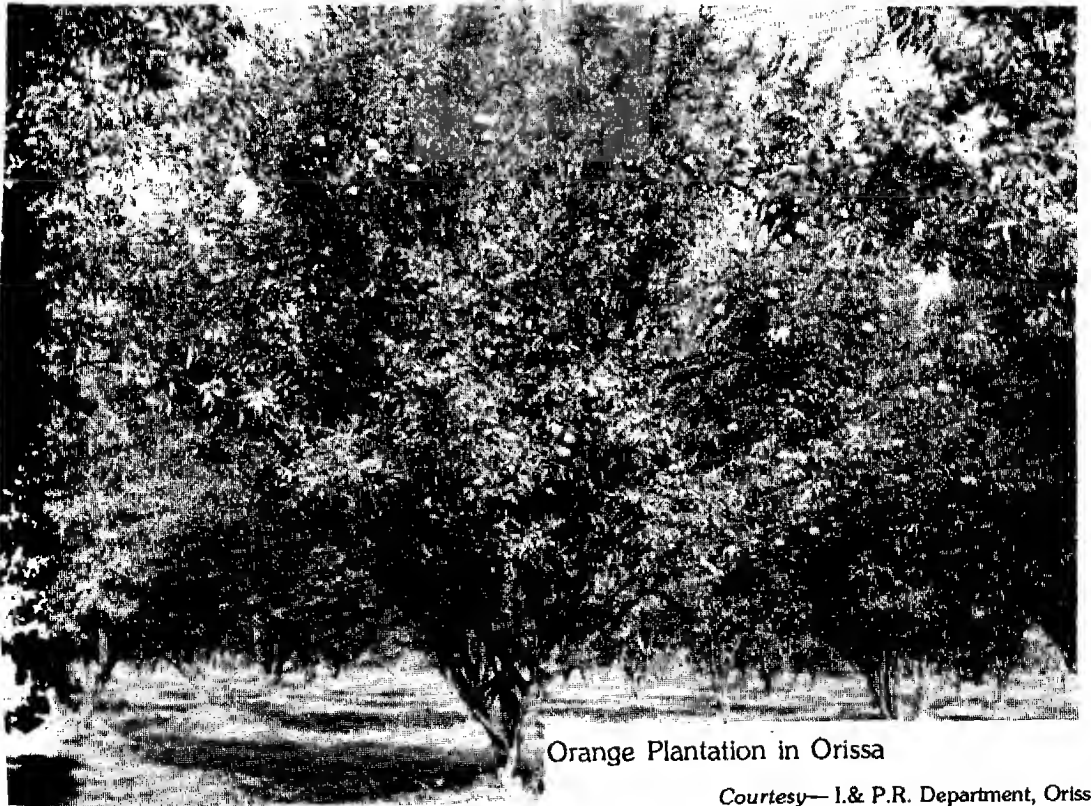
Winnowing of Paddy

Courtesy— I.& P.R. Department, Orissa



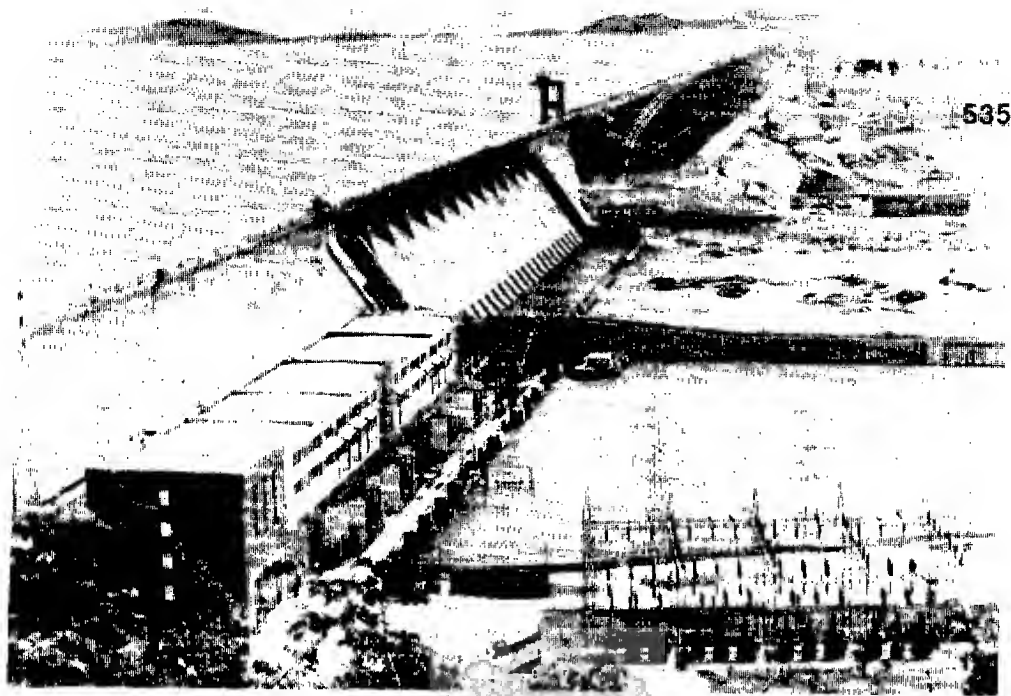
Coconut Plantation in Orissa

Courtesy— I. & P.R. Department, Orissa



Orange Plantation in Orissa

Courtesy— I. & P.R. Department, Orissa



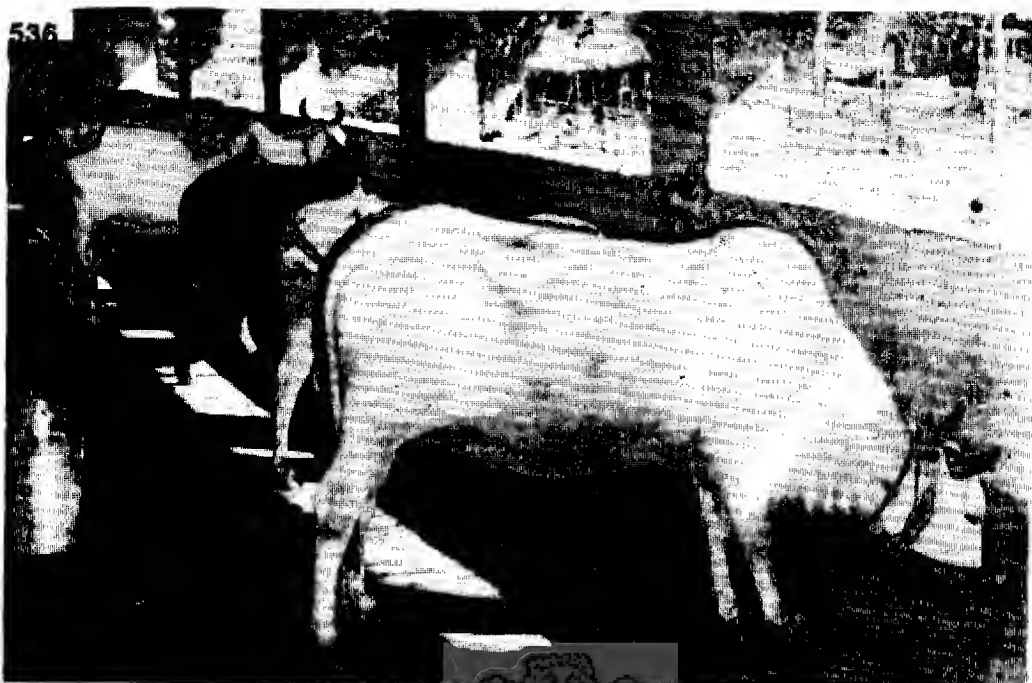
Hirakud Dam

Courtesy— I. & P.R. Department, Orissa



A Lift-irrigation Project

Courtesy— I. & P.R. Department, Orissa



A Dairy-farm

Courtesy— I. & P.R. Department, Orissa



Collection of Sea-fish

Courtesy— I. & P.R. Department, Orissa



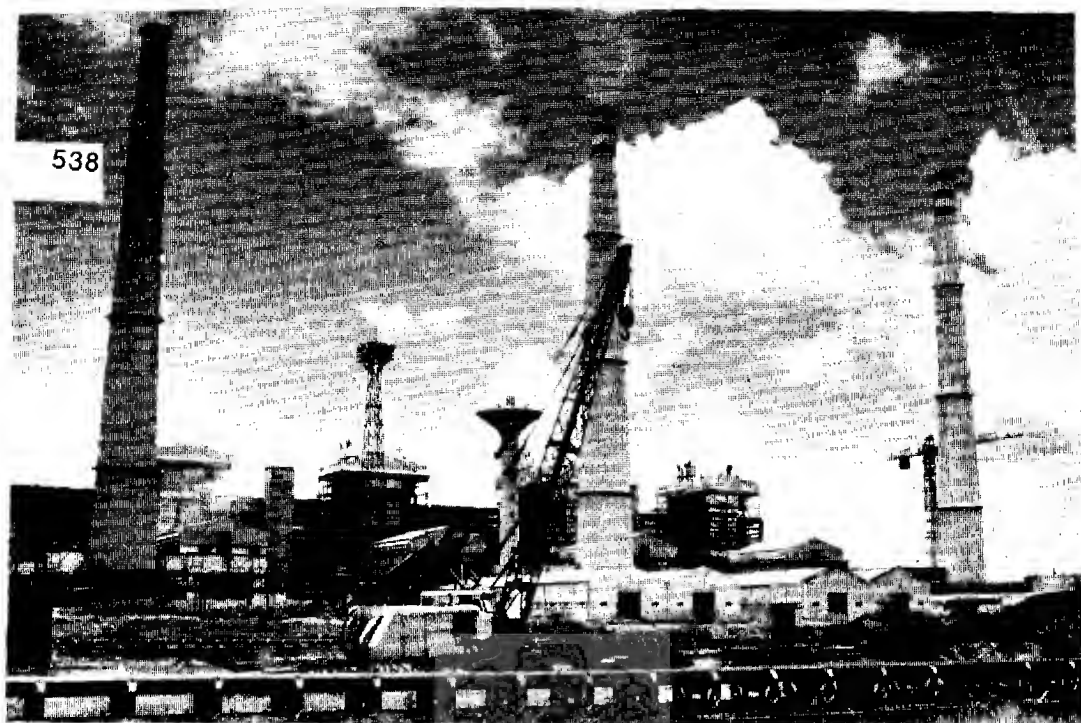
Sal Forest of Orissa

Courtesy— I.& P.R. Department, Orissa



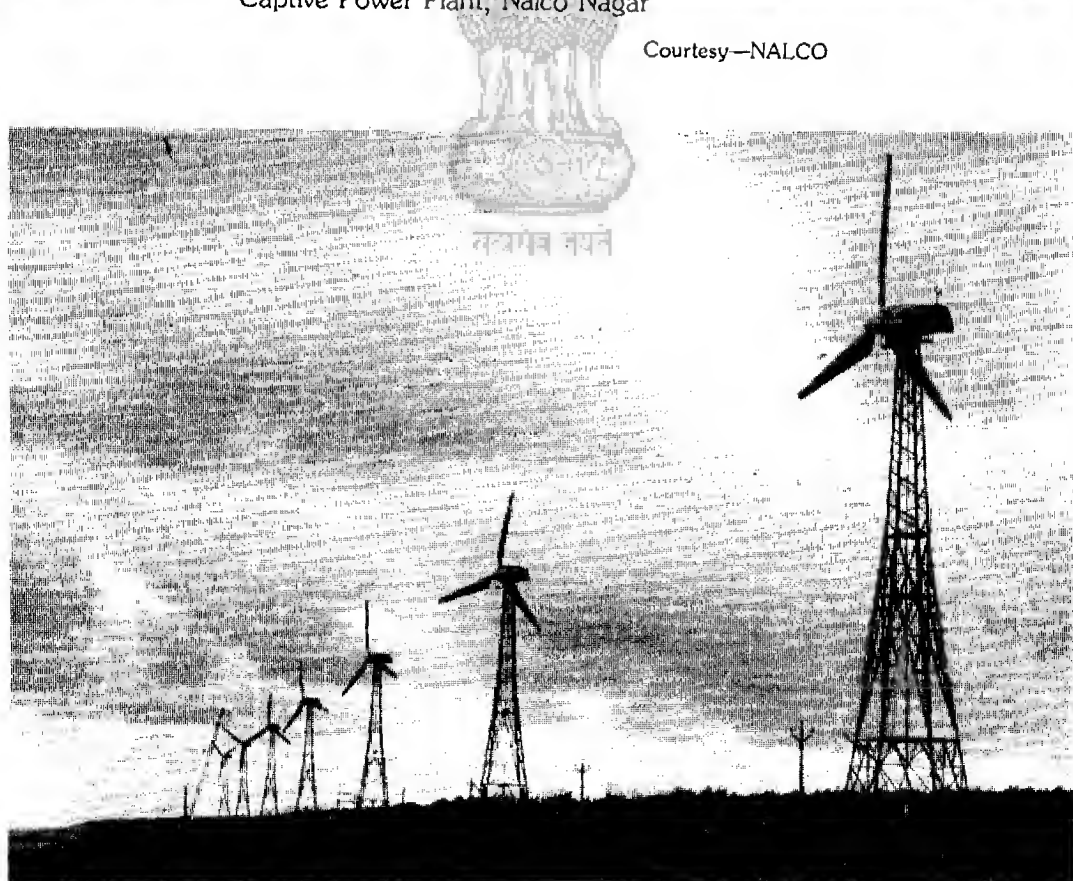
Fishing in the Chilika lake

Courtesy— I.& P.R. Department, Orissa



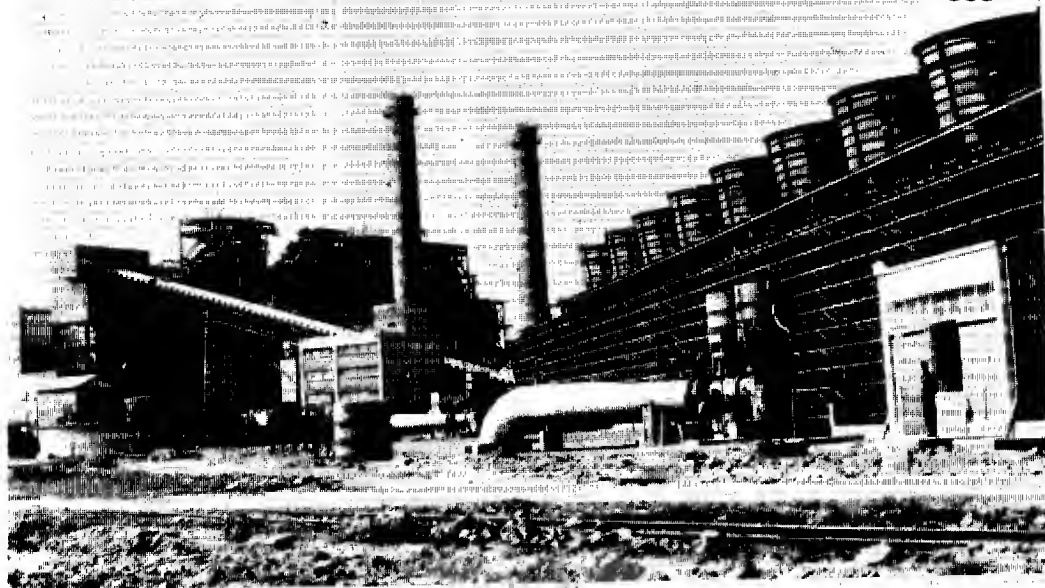
Captive Power Plant, Nalco Nagar

Courtesy—NALCO

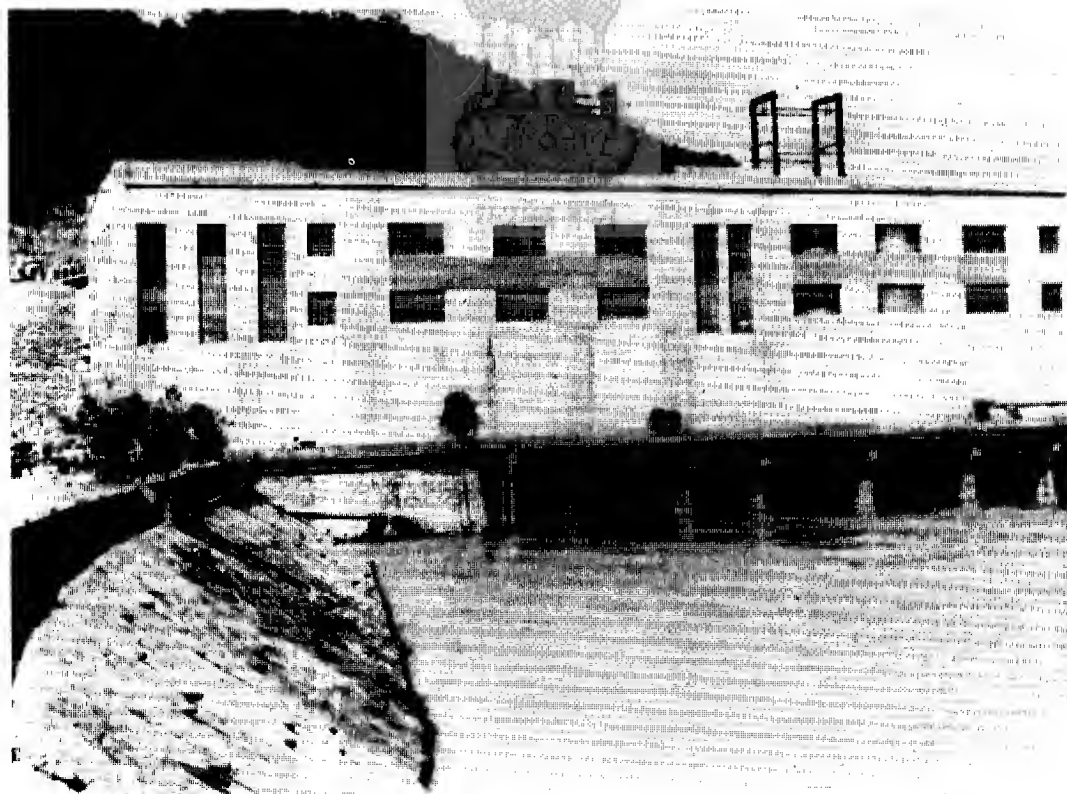


Wind Mill at Sea-beach, Puri

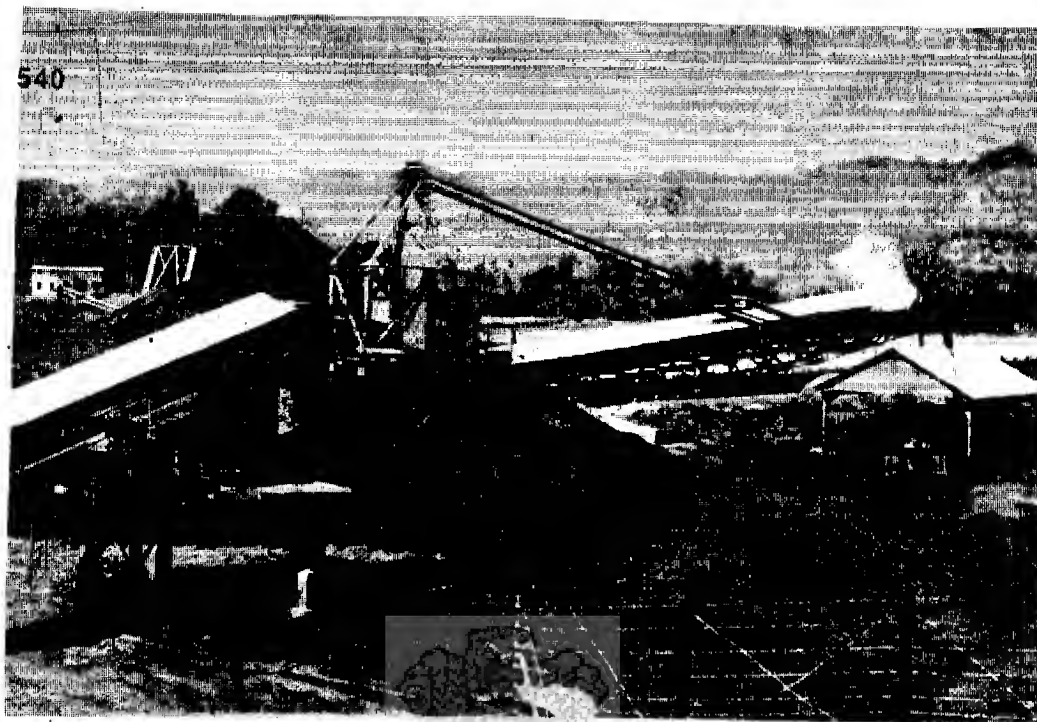
Courtesy— I. & P.R. Department, Orissa



Thermal Power Station, Talcher

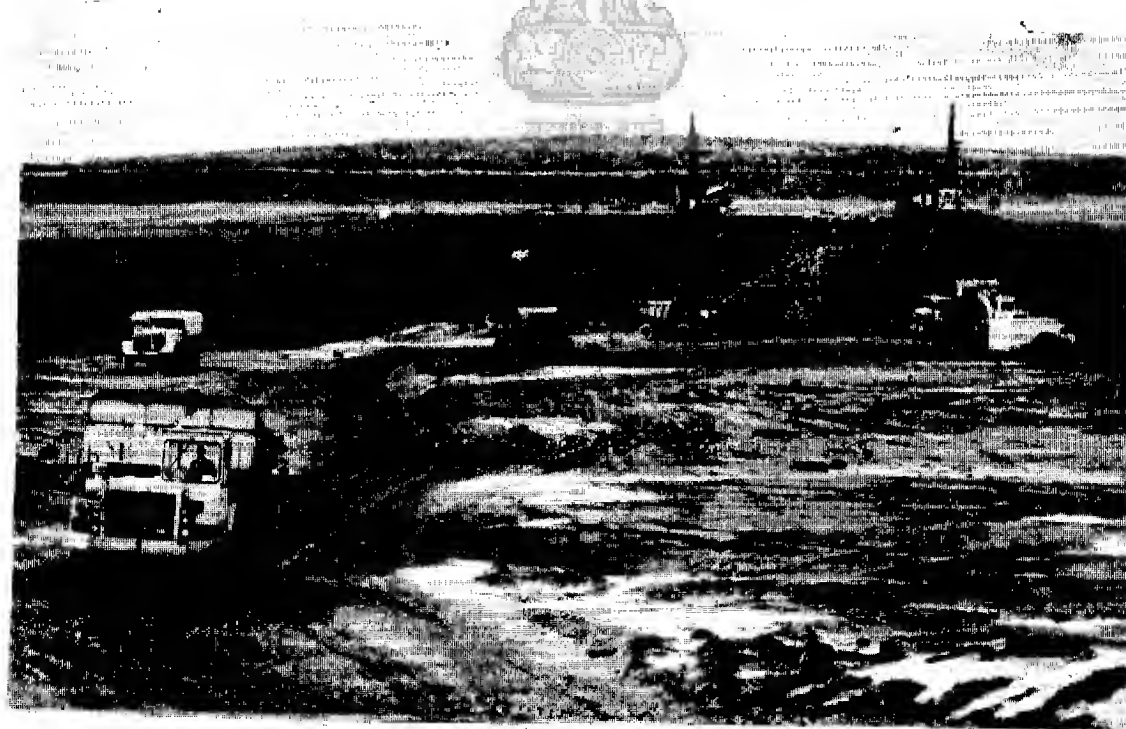


Machhkund Hydro-electric Power-house



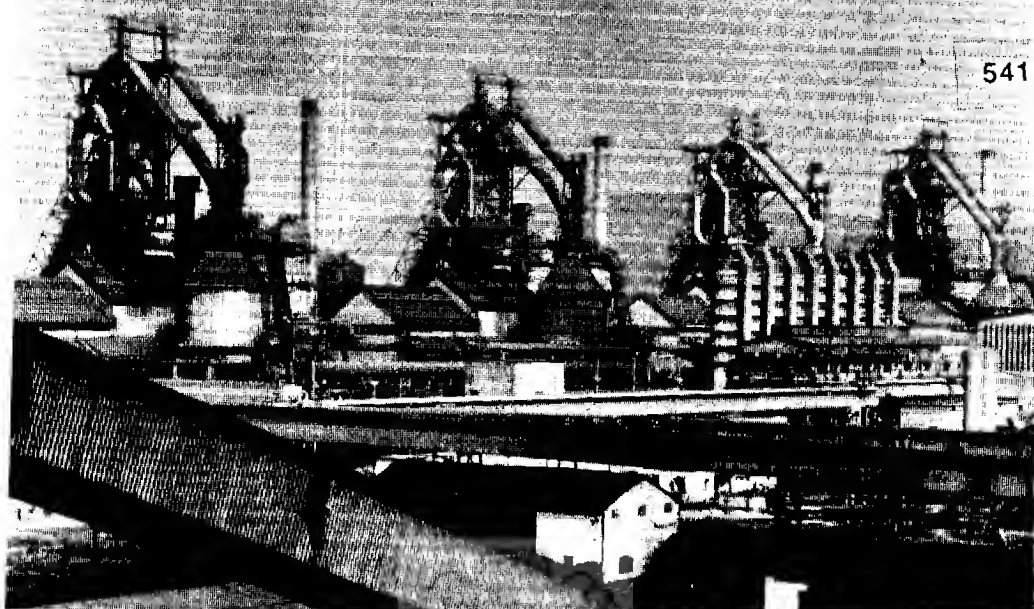
Barsuan Iron-ore mines

Courtesy— I. & P.R. Department, Orissa



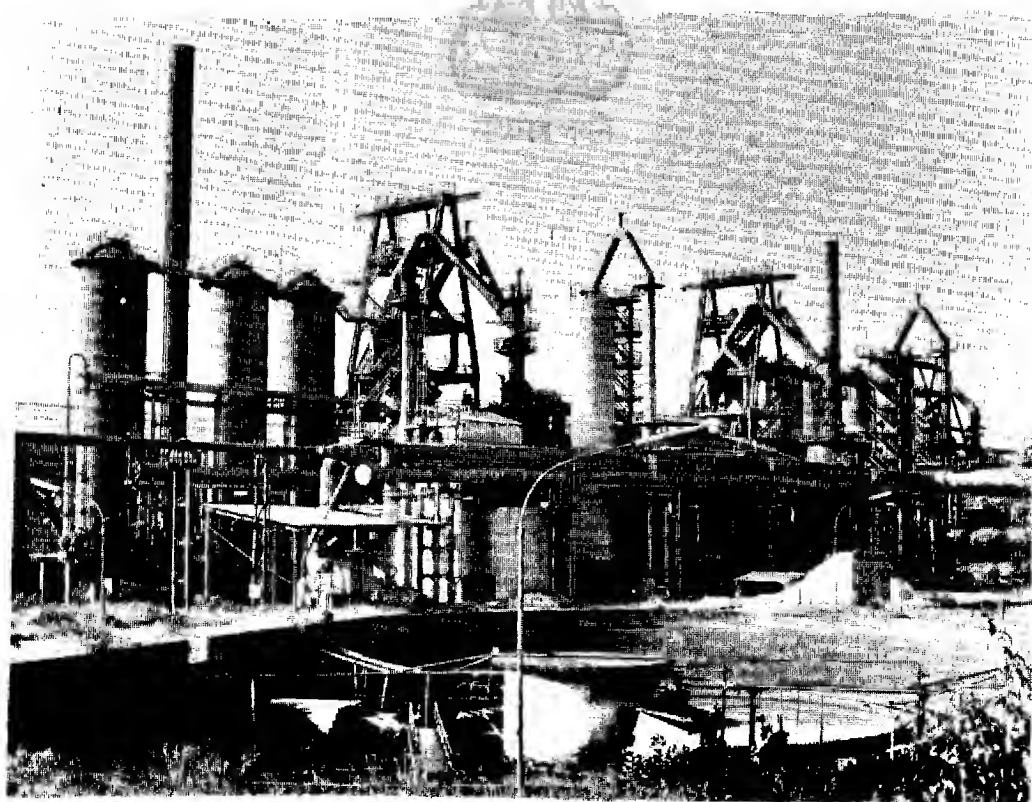
Bauxite Mines at Panchpatmali

Courtesy—NALCO



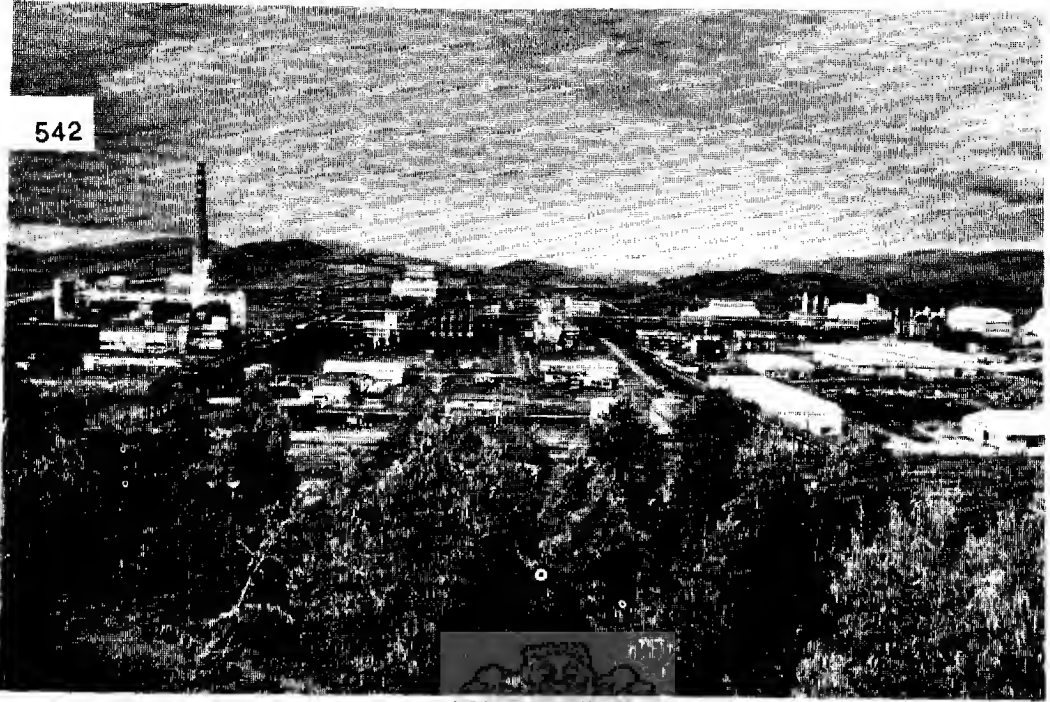
Blast Furnaces of Hindustan Steel Ltd., Rourkela.

Courtesy— I & P.R. Department, Orissa



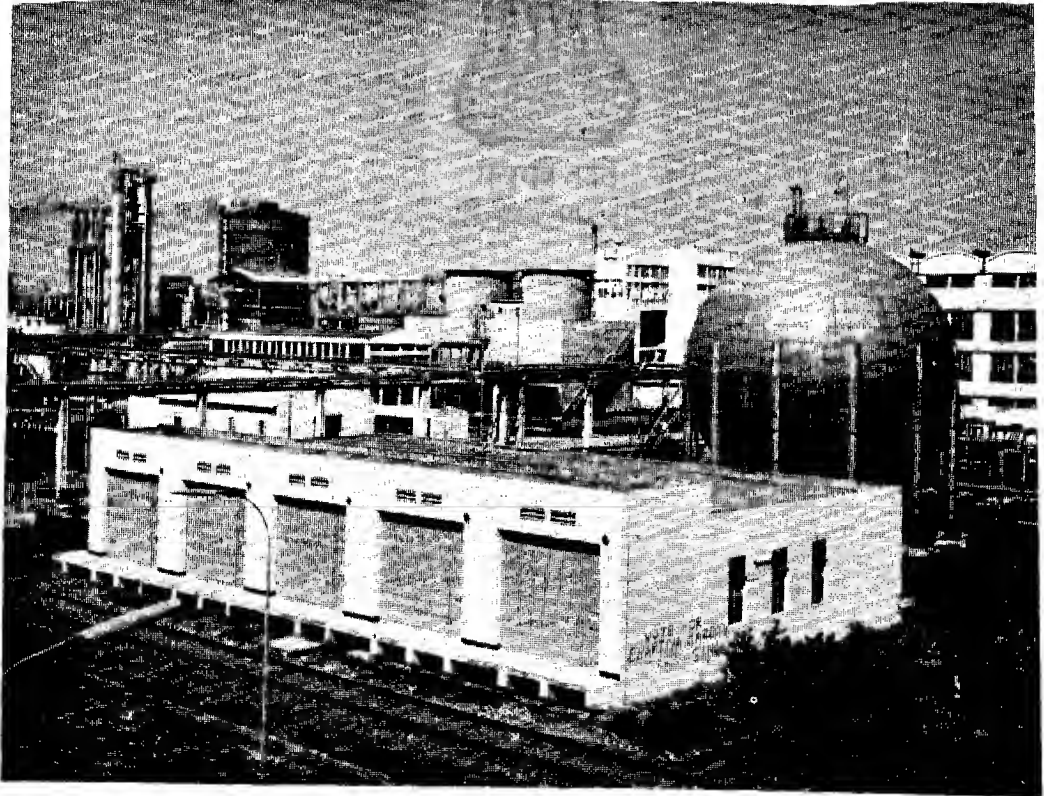
Furnaces of Kalinga Iron Works, Barbil

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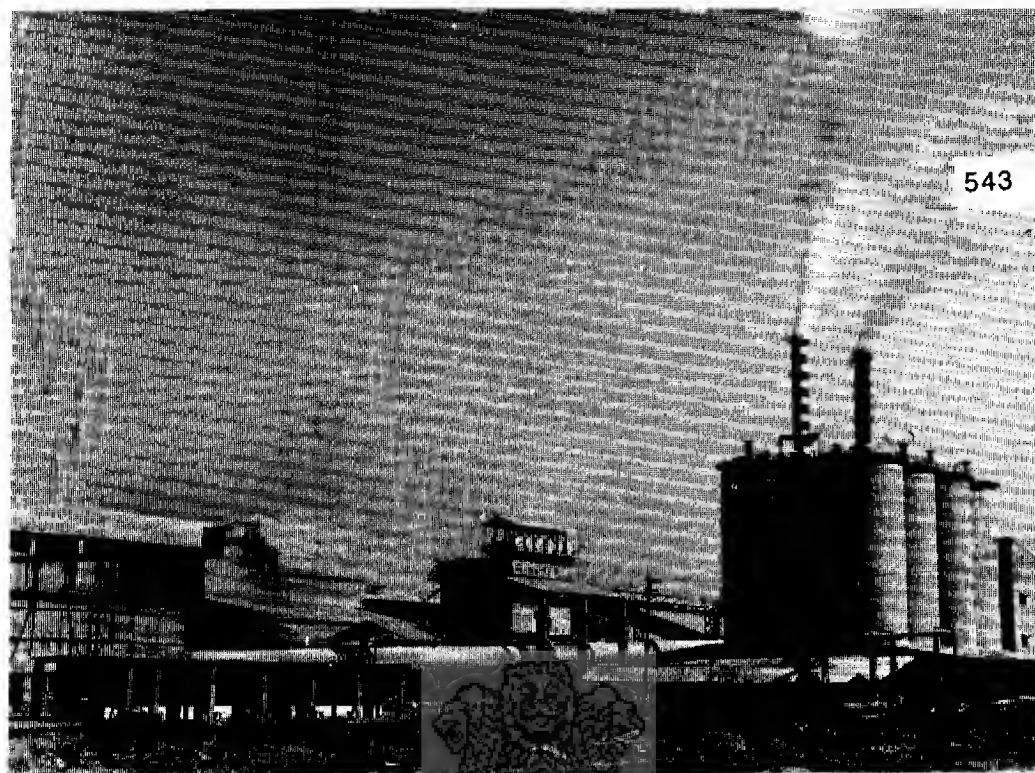
Alumina Refinery, Nalco Nagar

Courtesy—NALCO



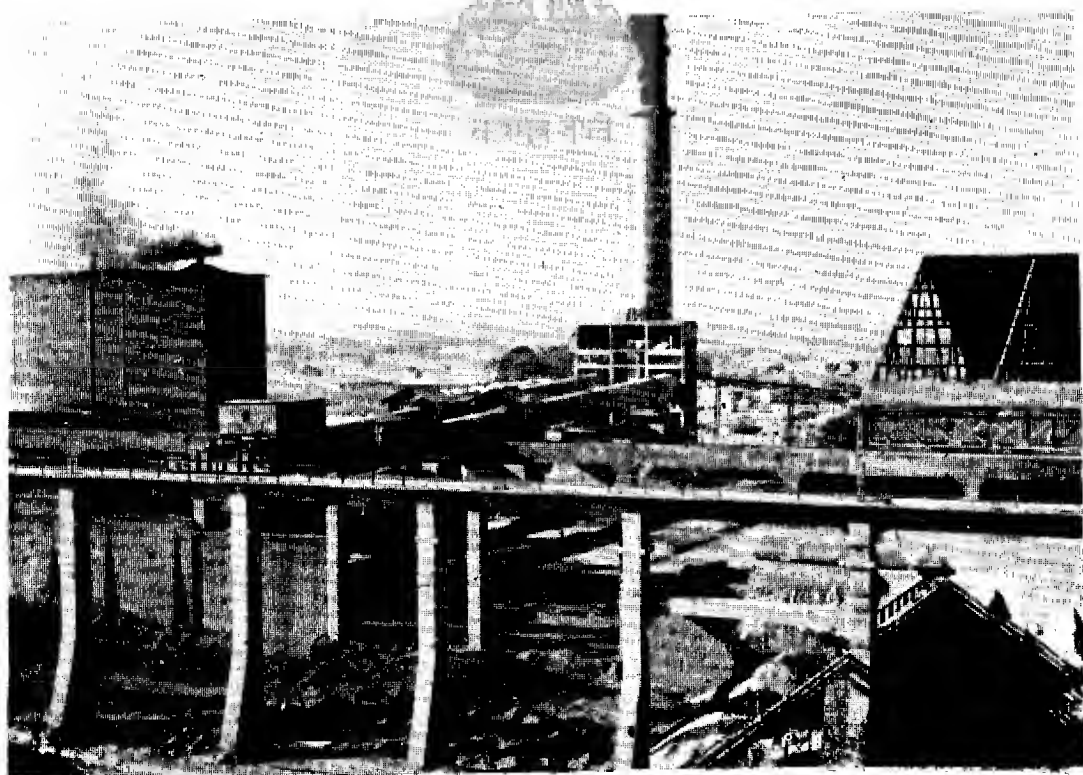
Fertiliser Plant, Rourkela

Courtesy— I.& P.R. Department, Orissa



Orissa Cement, Rajgangpur

Courtesy— I. & P.R. Department, Orissa



Hira Cement Works. Baragarh

Courtesy— I. & P.R. Department, Orissa

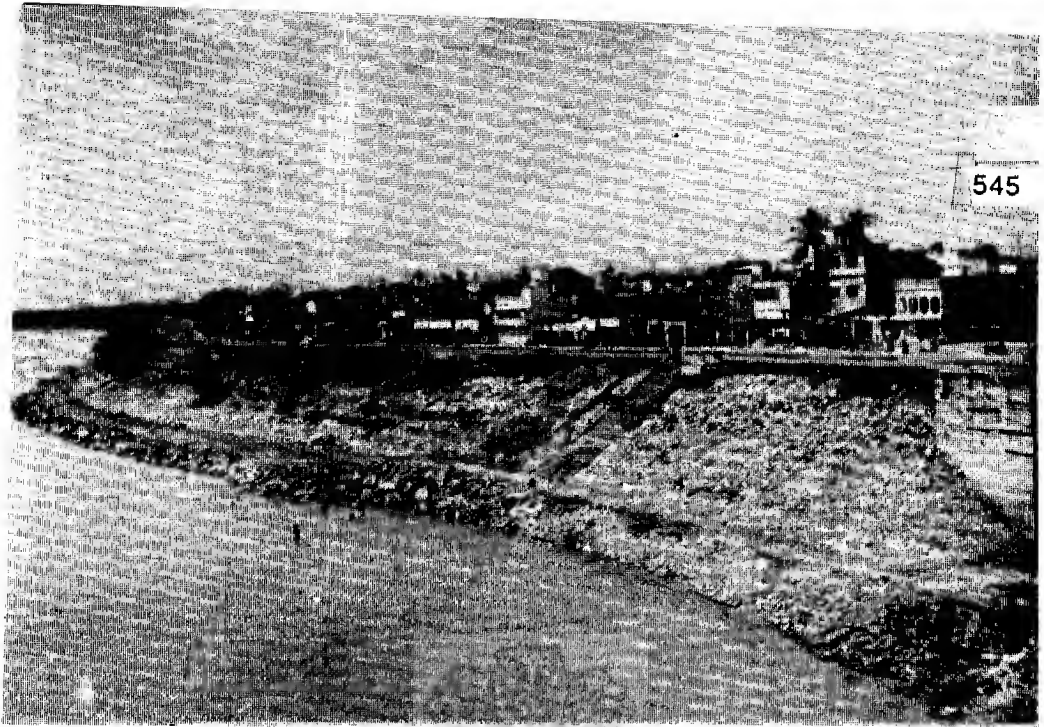


Bidi-making



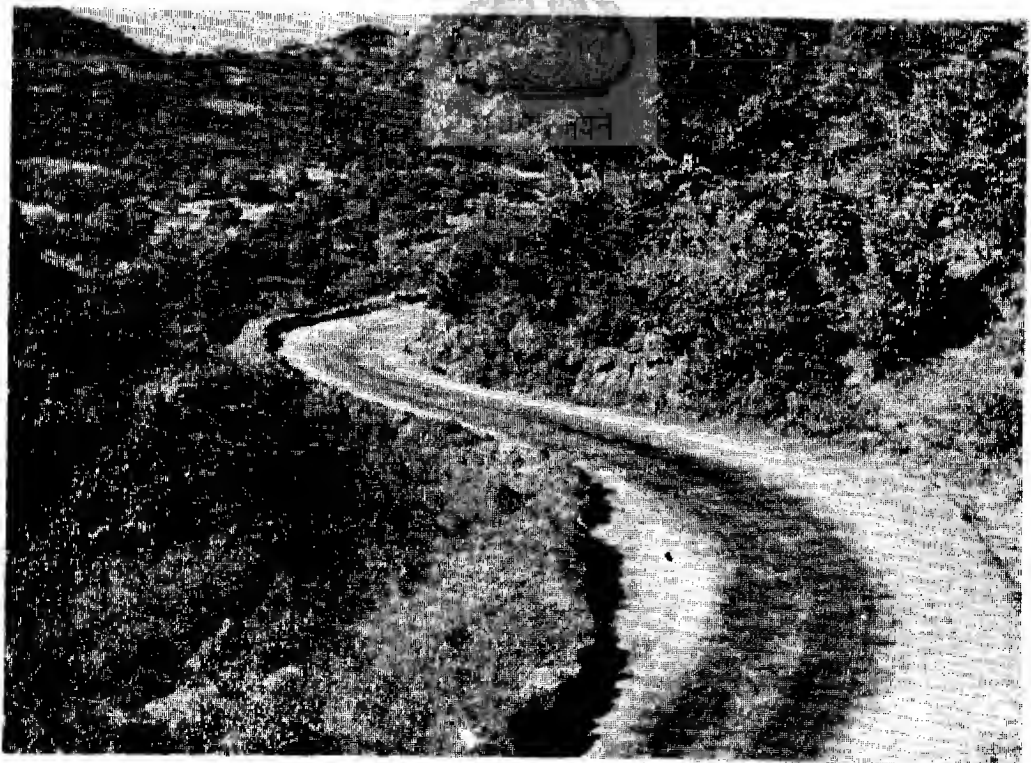
Broomsticks of Orissa

Courtesy— I.& P.R. Department, Orissa



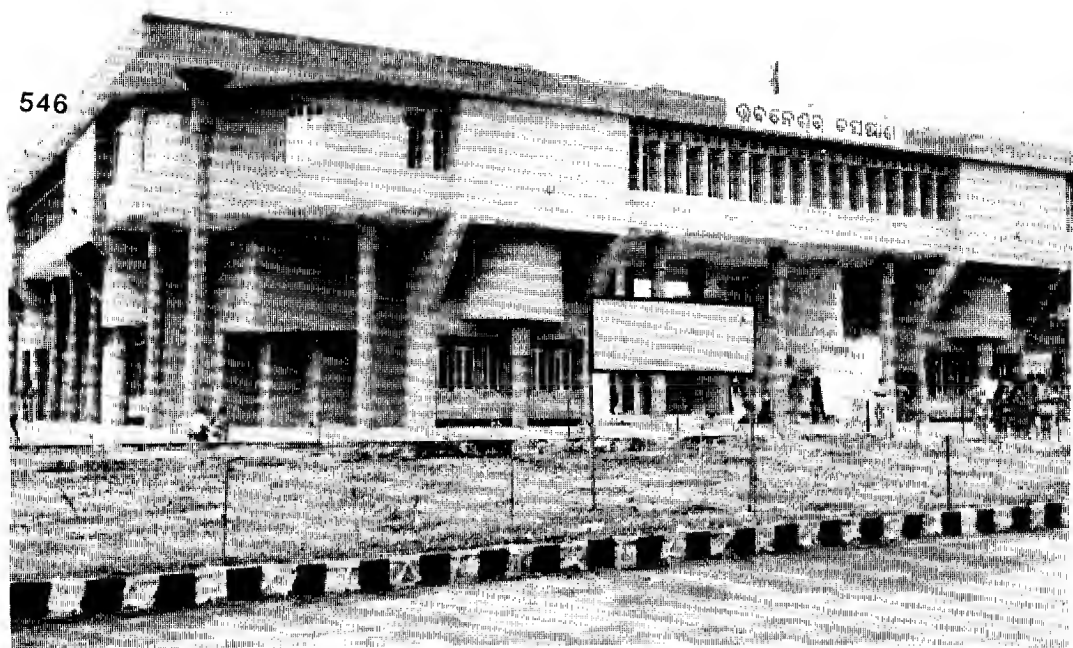
A view of Ring-road from Kathjodi embankment, Cuttack

Courtesy— I. & P.R. Department, Orissa



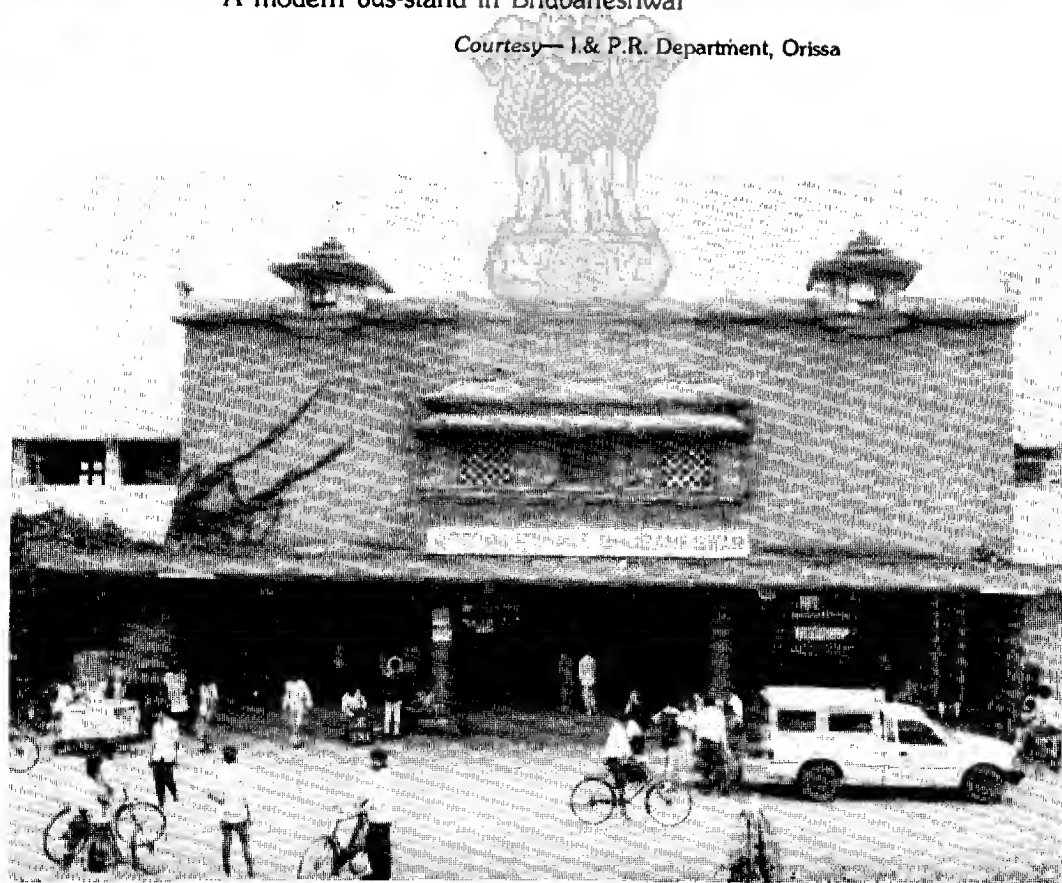
A Ghat Road of Orissa

Courtesy— I. & P.R. Department, Orissa



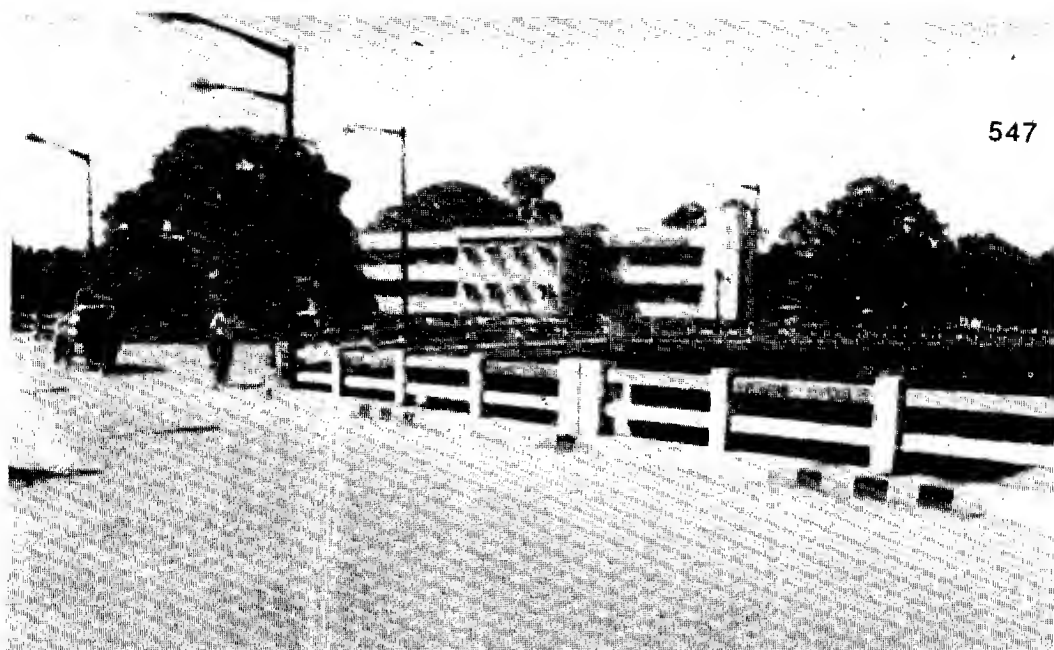
A modern bus-stand in Bhubaneswar

Courtesy— I. & P.R. Department, Orissa



Railway Station, Bhubaneswar

Courtesy— I. & P.R. Department, Orissa



A view of flyover, Cuttack

Courtesy— I. & P.R. Department, Orissa



A view of flyover, Baleshwar

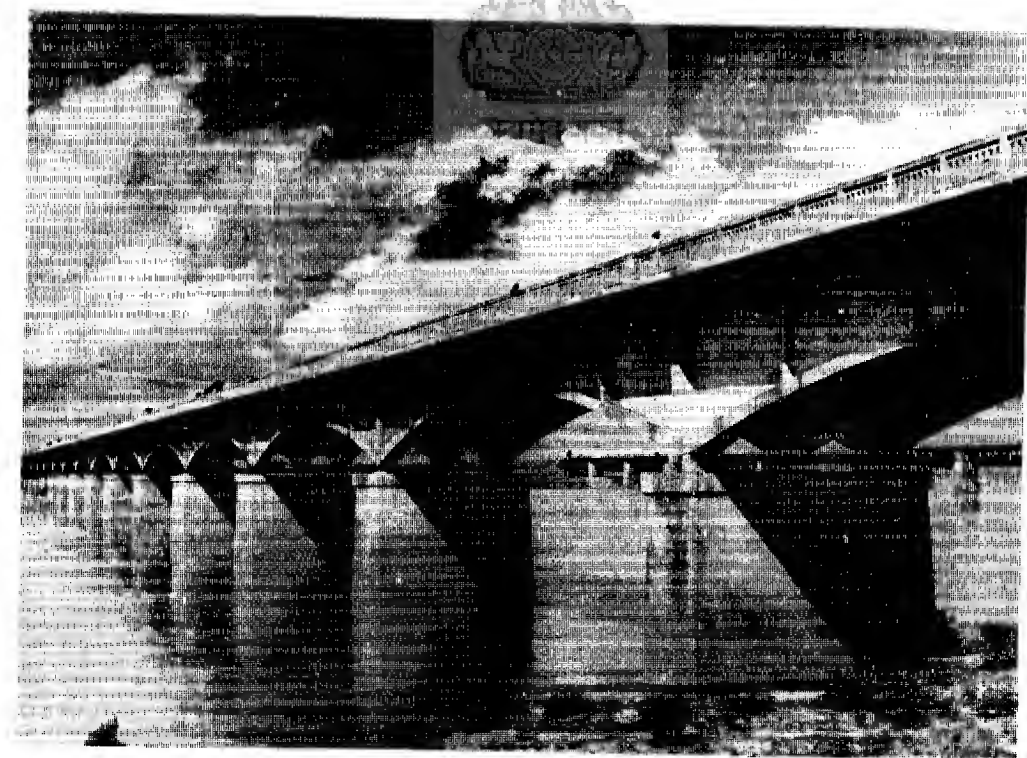
Courtesy— I. & P.R. Department, Orissa

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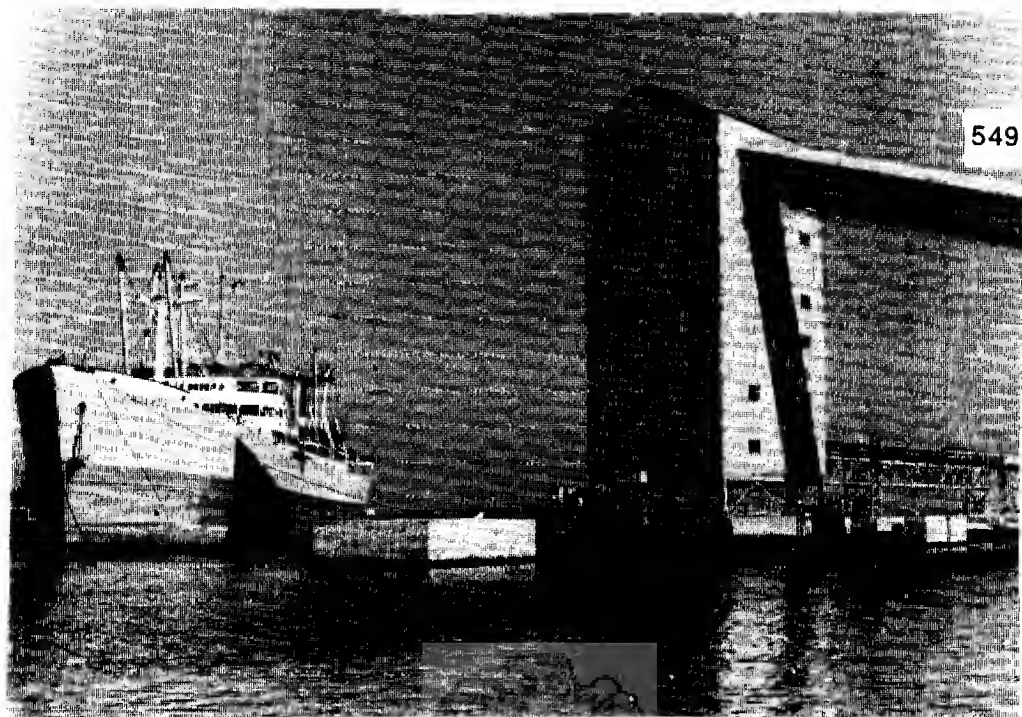
Bridge over Mahanadi Barrage at Jobra, Cuttack

Courtesy— I. & P.R. Department, Orissa



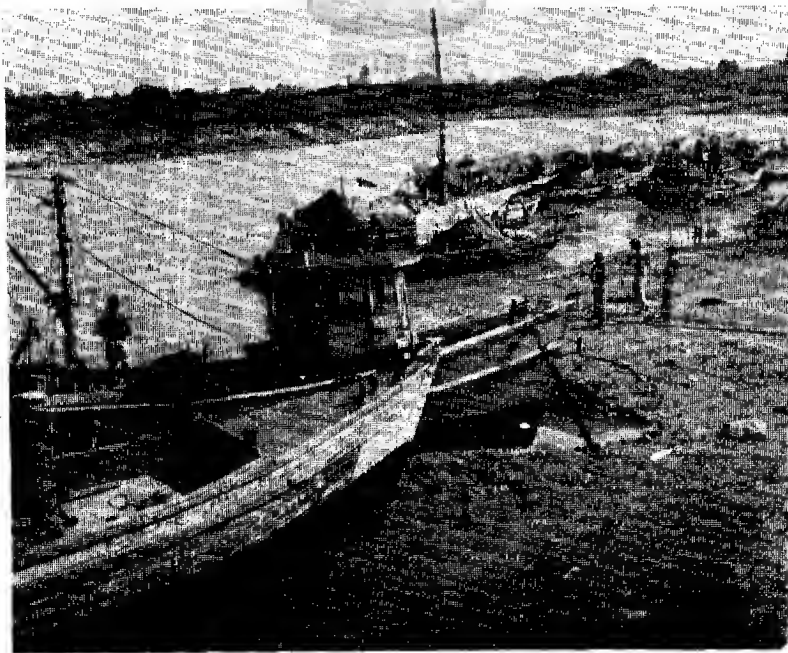
Road bridge also showing at a distance the railway bridge over Mahanadi, Cuttack

Courtesy— I. & P.R. Department, Orissa



Shipyard at Paradeep

Courtesy— I.& P.R. Department, Orissa



Ferry Ghat, Chandbali

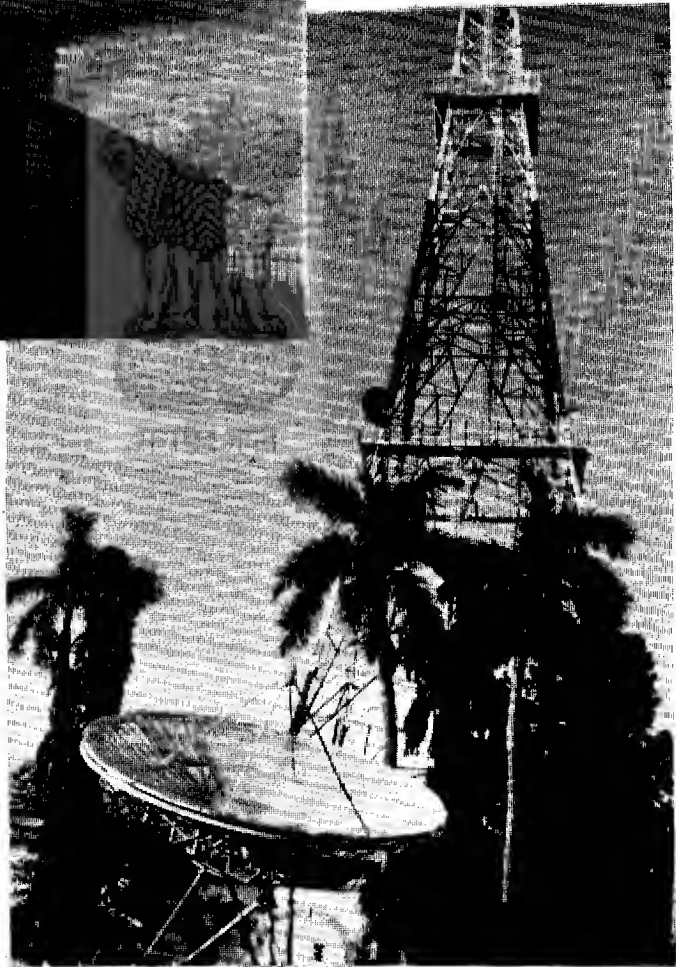
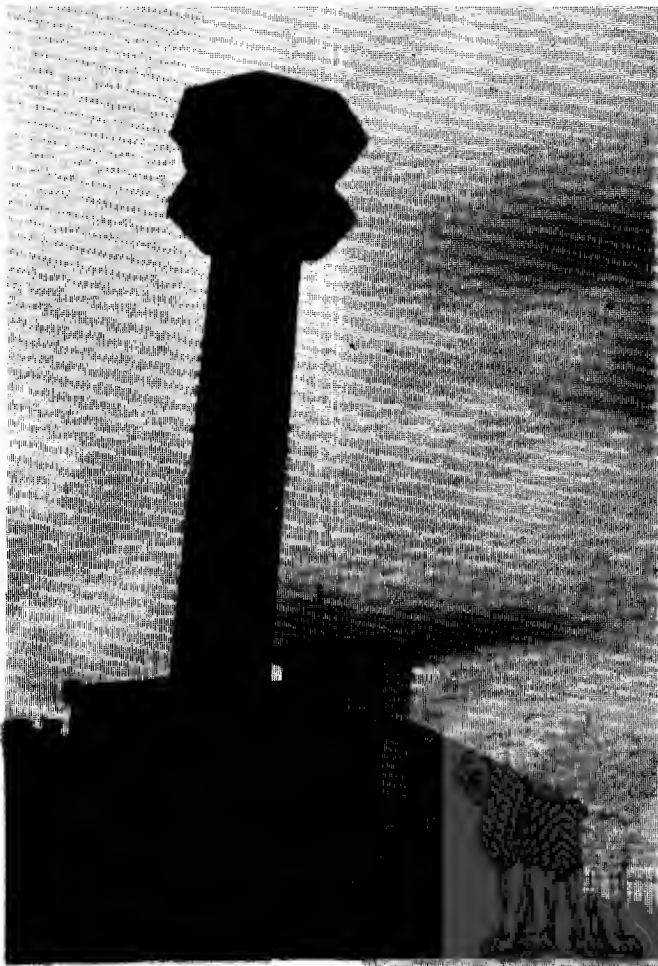
Courtesy— I.& P.R. Department, Orissa

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All India Radio, Cuttack

Courtesy— I. & P. R. Department, Orissa



Doordarshan Microwave Tower and the Studio, Bhubaneswar
Antenna and the Transmitter of Doordarshan Kendra, Cuttack

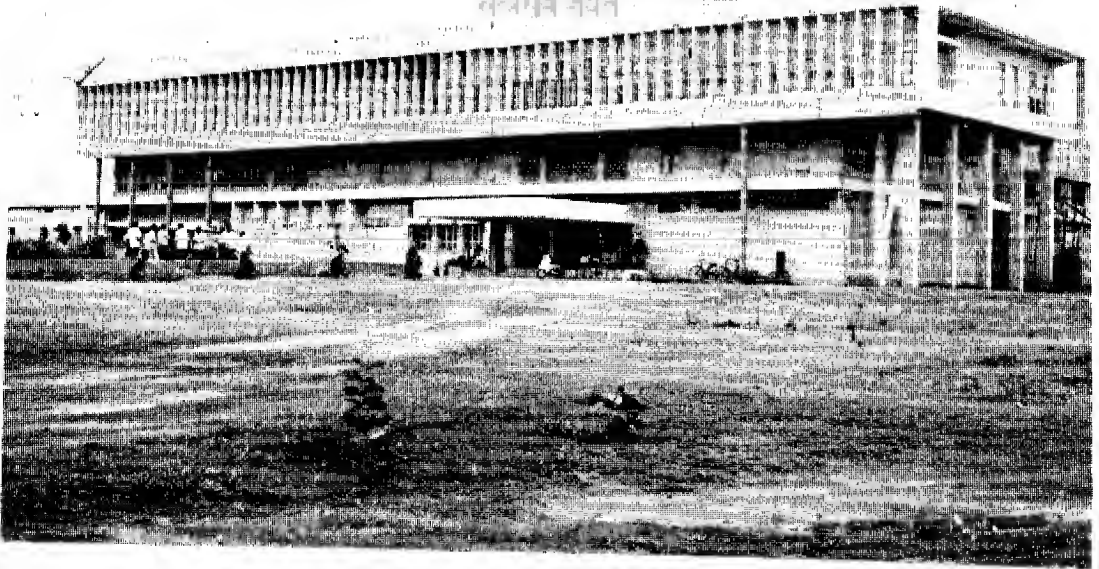
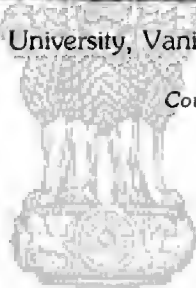
Courtesy—Director, Doordarshan Kendra, Cuttack (Top & Below)

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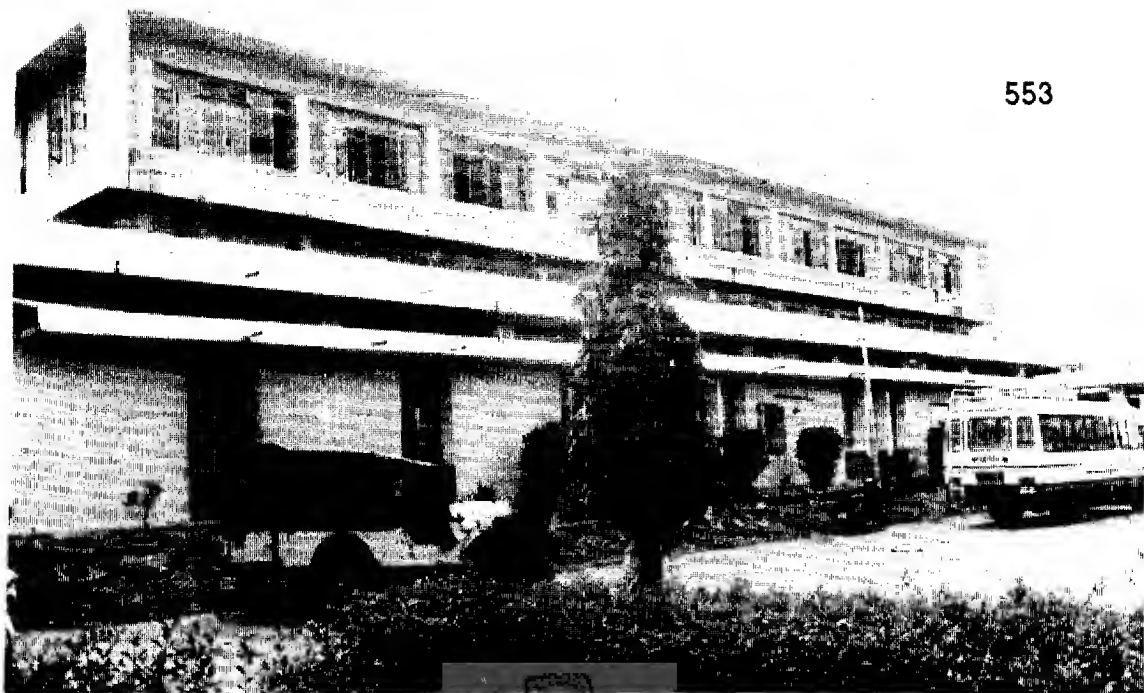
A view of Utkal University, Vani Vihar, Bhubaneswar

Courtesy— Registrar, Utkal University



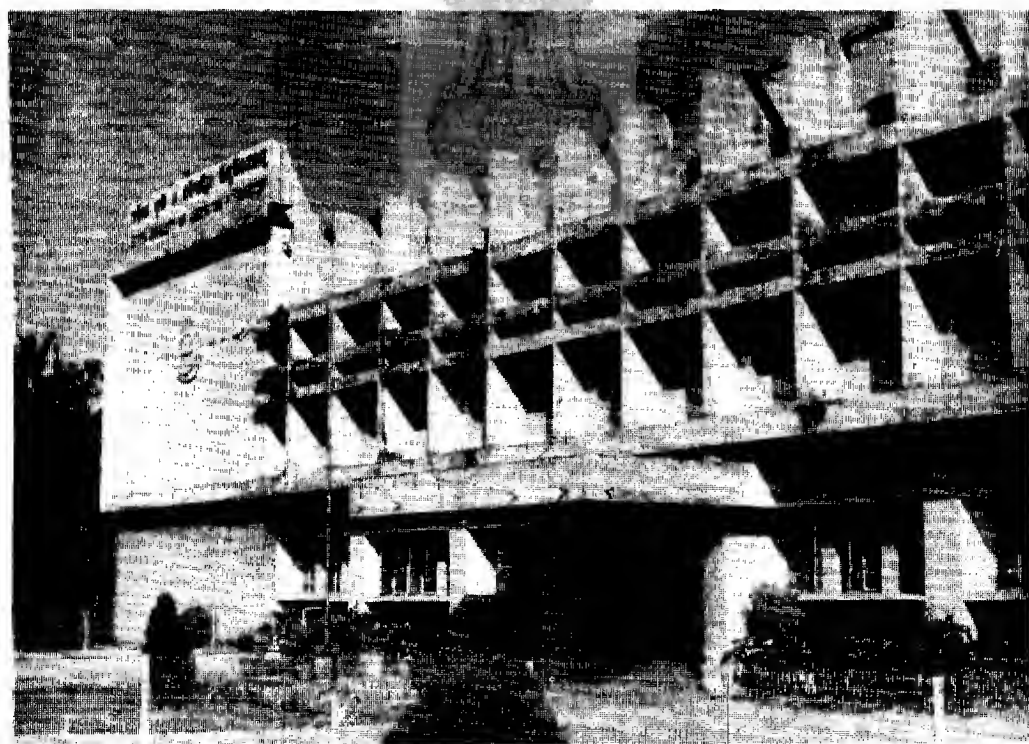
A view of Berhampur University, Bhanja Vihar, Rangeilunda

Courtesy— Registrar, Berhampur University



A view of Sambalpur University, Jyoti Vihar, Burla

Courtesy—District Information & Public Relations Officer, Sambalpur



A view of Orissa University of Agriculture & Technology,
Bhubaneswar

Courtesy—Registrar, O.U.A.T.



Shri Jagannath Sanskrit Vishvaavidyalaya, Shri Vihar, Puri

Courtesy—Registrar, S.J.S.V.



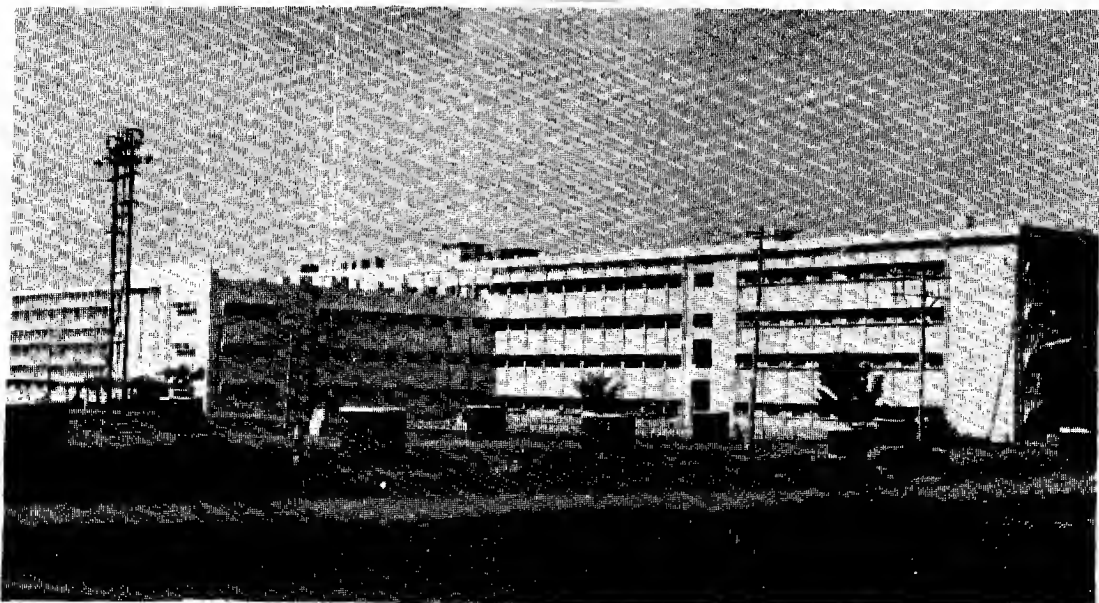
Ravenshaw College, Cuttack

Courtesy—I & P.R. Department, Orissa



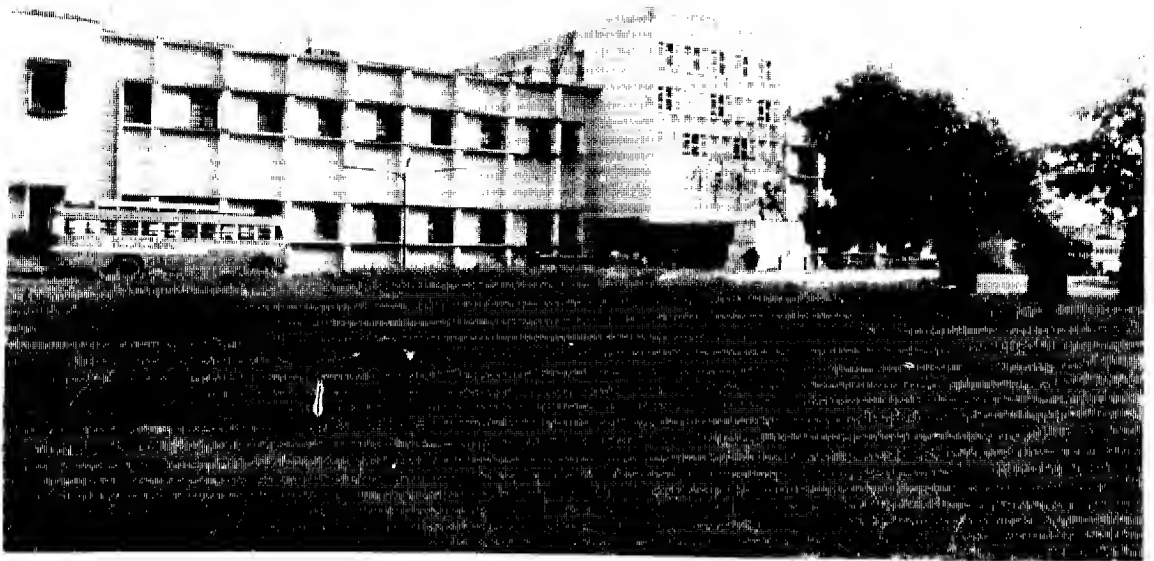
Shriram Chandra Bhanja Medical College, Cuttack

Courtesy—Principal, S.C.B. Medical College



**Maharaja Krushna Chandra Gajapati Medical College,
Brahmapur**

Courtesy—Principal, M.K.C.G. Medical College



Vir Surendra Sai Medical College, Burla
 Courtesy—District Information & Public Relations Officer, Sambalpur



Regional Research Laboratory, Bhubaneswar
 Courtesy—I & P.R. Department, Orissa

GLOSSARY

(Diacritical notations : ञ—ā; इ—ī; उ—ū; ओ—ō; ए—ē; ଡ—th; ଷ—ś)

Abadhān	ଅବଧାନ	— A village school teacher of old-time
Āchārya	ଆଚାର୍ଯ୍ୟ	— Teacher; preceptor
Amin (Ameen)	ଅମିନ	— Surveyor
Āshram	ଆଶ୍ରମ	— Hermitage
Bastī	ବାସ୍ତି	— Village-site
Chāṭasāli	ଚାଟଶାଳୀ	— An old-time village school
Chōwkīdar	ଚୌକିଦାର	— A watchman; Village police
Debōttar	ଦେବୋତ୍ତର	— Lands assigned for the worship of a deity, Endowed property
Dharmasālā	ଧର୍ମଶାଳା	— A rest-house for pilgrims
Dhenūkā	ଧେନୁକା	— Cow
Durbār	ଦରବାର	— A royal court
Gōchar	ଗୋଚର	— Pasture
Godā	ଗୋଡ଼ା	— High land
Gōtī	ଗୋଡ଼ି	— Bonded labour
Gōtra	ଗୋତ୍ର	— Lineage
Grāma Panchāyat	ଗ୍ରାମପଞ୍ଚାୟତ	— An elected body of local self-government at village level
Hāt	ହାଟ	— Rural market
Hūkūm	ହୁକୁମ	— An order of the authority

Jhālā	ଝୋଲା	— Land at the lowest level of a valley
Kharif	ଖରିଫ୍	— A crop season for staple cereal crop
Lākhraj	ଲାଖରାଜ	— Revenue free estate
Mahājan	ମହାଜନ	— A money-lender
Māhāl	ମାହାଲ	— An estate
Mahanta	ମହନ୍ତ	— Head of a Hindu religious foundation; An abbot
Maktab	ମକ୍ତବ	— Literally a writing place; a Muslim school
Mālā	ମାଳ	— Agency Tract
Math	ମଠ	— Hindu monastery
Mathā	ମଠା	— A fabric weaved together in silk and cotton threads
Melā	ମେଳା	— Fair; Religious congregation
Meriah	ମେରିଆ	— A young person meant for sacrifice by the Kondhs of old-time
Mughalbandi	ମୋଗଲବନ୍ଦୀ	— A political division of Orissa ruled by the Mughals as opposed to Garhjats
Mūsāfirkhānā	ମୁସାଫିର ଖାନା	— A rest-house for wayfarers
Nāllah	ନାଲ	— Small stream; Channel
Ništār cess	ନିଷ୍ଟାର ସେସ୍	— Forest cess
Parbata	ପର୍ବତ	— Mountain
Pitha	ପୀଠ	— A very important holy centre

Rabī	ରବି	— A crop season (Autumn-Spring)
Raiyat	ରୟତ	— A tenant holding land for cultivation
Śalāmi	ସଲାମୀ	— Cash or premium paid to a landlord by the purchaser of land
Śamvatsara	ସମ୍ବତ୍ସର	— A period of one year
Śarāī	ସରାଇ	— A rest-house for travellers
Tendū	ଡେଣ୍ଡୁ	— A water lift; a contrivance usually made of wood to lift water from a lower level to a higher level for irrigation purpose
Tāl	ଟୋଲ	— A school for teaching Sanskrit language
Zamindār	ଜମିନ୍ଦାର	— A landlord



नन्दमित्र नन्द

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[Abbreviations used: (H) for hill, (R) for river, (A) for animal, T for trees.]

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